

"A STUDY OF THE USE OF PRESCRIPTION AND NON-PRESCRIPTION
DRUGS BY AN ELDERLY POPULATION OF THE SOUTHERN PENINSULAR
AREA OF CAPE TOWN"

BY

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SUMMARY

The aims of this research were to establish the drug use patterns of an elderly population in the southern suburbs of the Cape peninsula and to determine the extent of knowledge with respect to their medicines. In addition the relationship between drug use patterns and medication knowledge and the socio-economic status of the elderly, the health care services utilised by them and the amount of information conveyed on medicine container labels was assessed.

Two hundred and sixty non-institutionalised caucasian elderly over the age of 65 years and living in old age residences were interviewed. The interviews were structured with 4 major components:

1. a questionnaire designed to collect participant particulars,
2. an interview schedule to collect information on drug use patterns and to assess participant knowledge of medicines used (Knowledge score)
3. a container label assessment schedule (Label score)
4. a cognitive function test to identify and exclude severely cognitively impaired elderly from the study population.

Analysis of the data showed the majority of the participants were English-speaking women of social class 1 or 2. Approximately one fifth of all participants were male. The State-run health care services were utilised by 38% of the participants whilst 73% retained their own general practitioner. A total of 843 medicines were used with an average of 3.2 medicines per capita. Ninety-five percent of all participants took prescribed medi-

cines, with diuretics, non-narcotic analgesics/antipyretics, and tranquillisers the 3 most frequently prescribed classes. A smaller percentage - 41.5% - of participants used self-prescribed medicines, of which non-narcotic analgesics, homeopathic and herbal medicines, and vitamins were taken most frequently. When assessed against container label directions approximately one third of participants were non-compliant with their dosage regimens. The majority of all medicines had been used on a continuous basis for 1 to 10 years.

Average knowledge score was 58%. The majority of participants had very little knowledge about interactions, side effects, and maximum permissible dose for their medicines. Just over one fifth of all participants could correctly state both the name and the strength of their medicine. Average knowledge score was found to decline with increasing age, but no relationships were found to exist with the other patient characteristics. Similarly, no relationship was found to exist between knowledge score and label score. Participants utilising the public health care services tended to have a lower knowledge score than those receiving treatment from the private sector. Twenty-six percent of all labels did not have specific usage directions. The private sector suppliers were most frequently culpable of omitting instructions. Label legibility also proved to be a problem for the elderly participants.

The drug use patterns identified in this study are similar to those of the American and British elderly and should be of value in compiling a health care plan for the South African elderly, although further research involving other race and cultural groups is needed.

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DEFINITIONS

Compliance The participant's verbal indication of adherence to the dosage schedule as shown on the container label

Drug Use Patterns What medicines are used and how they are being used in terms of dosage regimen, manner of use, duration of use and per capita consumption.

Food Any substance normally consumed for nutrition and also includes salt (NaCl) or salt substitutes, and other chemicals that may be used as seasoning or preservatives.

Interact Interfere with the medicine in such a way that:

- a. it may be de-activated and thus rendered therapeutically ineffective,
- b. its side effects may be potentiated to an intolerable level
- c. its dose may have to be increased because of an aggravation of the disease being treated.

Knowledge Score The amount of knowledge the participant has, expressed as a percent of the amount of knowledge he (she) should have to enable him (her) to use his (her) medicine in such a way that it will not be detrimental to his (her) health.

Medicine A tablet or capsule preparation consumed for the purpose of maintaining the present state of health or well-being or of restoring good health or well-being.

Participant Characteristics The particulars of the participant such as age, gender, marital status, co-habitants, smoking and

drinking habits, level of education, social status, monthly income, social pension, retirement status, health care services utilised, medicines supplier and medical aid benefits.

Prescribed Medicine Any medicine that is used on the basis of the diagnosis and instruction of a medical doctor.

Self-prescribed Medicine Any medicine that is used on the basis of the patient's own diagnosis and without the instruction of a medical doctor.

Tertiary Education Tertiary education includes only the "formal" types of tertiary education such as university and college (for example teachers' and nurses' training colleges) education. However, it does not include training at commercial colleges.

CHAPTER 1

1.1 INTRODUCTION

It has been noted (Meiring PdeV, 1989) that the health care services provided for the South African elderly are inadequate. By the year 2020 South Africa will have a population of approximately four million people aged 65 and over, many of whom will be needing supportive care (Glajchen, 1989). It is essential that any services to be provided to the elderly be carefully planned and based on known requirements so that there can be maximum utilisation of manpower.

Old age is accompanied by numerous social as well as physiological and pathological changes. Often, the social changes may have a negative impact upon the health status of the elderly person and vice versa. This makes health care management of the elderly particularly difficult and time consuming.

Of particular concern is the drug management of the elderly patient. The elderly receive more prescriptions than younger patients (Cartwright et al. 1988). They tend to use their medicines for longer periods of time, receiving more repeat prescriptions than other age groups (Murdoch 1980) and have been found to have a high incidence of adverse drug reactions (Williamson et al 1980, Martys 1982, Casteldon et al 1988). Drug related adverse events, irrespective of the reasons for them, can be expensive. In the study done by Cooke et al (1985), length of inpatient stay due to adverse drug reactions ranged from 3 to 18 days in the 65 years and older age group.

It is the recommendation of both the Royal College of Physicians (London, 1984) and the World Health Organisation (1980) that more emphasis be placed on the education of not only the health care providers, but also on the education of the elderly patient in the correct use of medicines.

Several studies have shown that patients do consider medication information to be important and that patient satisfaction and compliance improve with more detailed counselling (Gardner et al 1988, Culbertson et al 1988, Hulka et al 1976). The pharmacist, as the person who normally dispenses the patient's medication, can play a major part in the education of the elderly patient.

In South Africa, very little is known about the elderly out-patient and his use of medicines. Before any comprehensive plan to educate the elderly in the safe use of medicines can be drawn up, more information on their drug use patterns needs to be collected. In addition, the knowledge that the elderly already have with respect to their medicines must be determined and any socio-economic factors influencing this knowledge and drug use must be taken into consideration. It is with these aspects in mind that this study has been undertaken.

1.2 LITERATURE REVIEW

1.2.1 THE ELDERLY POPULATION

The elderly sector of the population is growing rapidly, not only in Europe and the United States of America, but also in South Africa. Glajchen (1989) draws attention to the prediction that by the year 2020, the total number of 65 year olds in South Africa will be only slightly less than that of the total white population in 1985. The number of aged in South Africa will increase from just under one and a third million in 1985 to over 4 million by 2020 (President's Council report PGI/1988). This three-fold increase in the elderly population within 35 years will place heavy demands on the health care services and on the community as a whole.

Old age is accompanied by social and financial changes as well as declining health. Most people retire from full-time employment within 5 to 10 years after reaching the age of 60 years. This results in a shift in the status of the retiree within the community and frequently an accompanying change in financial circumstances. A further shift in social standing may occur with the loss of a spouse. Both of these major changes are stressful and Berardo (1988) points out that bereavement at least, has been shown to have a pronounced effect on both health and life satisfaction.

Women tend to live longer than men and in the over 85 years age group, women may outnumber men by as much as 4:1 (Cartwright et al 1988). Many of these old women may be living alone and may

need community help and support (Berardo 1988). Glajchen (1989) points out that the South African National Council for the Aged estimates that approximately 7% of the 65 to 74 years age group, for both sexes, needs some help with personal care and daily activities and that this figure increases to 39% in the over 85 year age group.

The elderly are a unique sector of the population not only in terms of their position within the community, but also in terms of their health care needs. Old age itself is not a disease, but the aging process with the accompanying pathological and physiological changes complicates health care management of the elderly patient. This is particularly true when the patient needs medication

1.2.2 DRUG USE IN THE ELDERLY

Drug use by the elderly is characterised by the following major factors:

1.2.2.1 ALTERED PHARMACOKINETICS AND PHARMACODYNAMICS

The ability to metabolise and excrete drugs, the distribution volumes of drugs and the end organ sensitivity to drugs all alter as part of the natural aging process (Greenblatt et al 1982, Platt 1986, Beers et al 1989). For the average 80 year old, renal function may be reduced to as little as half of that of a 30 year old. This must be taken into consideration in treating the elderly as many drugs are excreted via the kidneys, and appropriate adjustments to their medication regimens must be

made (Lonergan 1988). In addition, drug metabolism by the liver may be reduced by diminished hepatic blood flow, impaired hepatic microsomal enzyme activity, and a reduction in size of the liver. Drug distribution is affected by a change in the lean muscle to fat ratio in the older body. Lean body mass declines while the adipose-tissue mass increases. There may also be an age-related decline in plasma albumin which may be of relevance when highly protein bound drugs are used.

Apart from these changes in pharmacokinetics, pharmacodynamic alterations have also been noted. Usually, the elderly patient exhibits an increased sensitivity to drugs, typical examples including the narcotic analgesics and oral anticoagulants, although a reduction in sensitivity has been noted for some drugs such as the beta-blockers and beta-agonists (Beers et al 1989).

The influence of diet and nutrition on pharmacokinetic parameters should also be borne in mind. The elderly are likely as a consequence of disease, drug use and social isolation to develop nutritional deficiencies and factors such as self-prescribed nutritional supplements and general nutrition are important considerations in drug management of the elderly. (Lamy 1982, Anderson 1988, Stewart 1989)

1.2.2.2 HIGH PER CAPITA USE OF MEDICINES

Despite comparable paediatric and geriatric populations in the United Kingdom, 12% and 15% respectively, 32% of prescriptions are for the elderly, and 10% only for the paediatric group (Report, Pharmaceutical Journal of the Royal Pharmaceutical

Society of Great Britain 1987). In their book "Elderly people, their medicines, and their doctors" (1988), Cartwright and Smith examine prescribing trends in England. They find that between 1959 and 1979, the annual number of prescription items dispensed per person increased by one third. Over the next nine years, there was no further significant increase overall, but more detailed analysis of the data showed that from 1977, when separate records of drug use by the elderly were started, the prescribing rate for the elderly had increased by 27% compared with a fall of 6% among the non-elderly. An increase in medicine use by the elderly was also noted by Hale et al (1987) in their study in the state of Florida, USA where during the period from 1980 to 1985, the average number of medicines per participant increased from 3.2 to 3.7.

1.2.2.3 POLYPHARMACY

The elderly may suffer from a multiplicity of pathologies each presenting with its own set of symptoms. It has been reported that the ambulatory elderly may experience from 4 to 7 disease states and that they may complain of an average of 3.7 symptoms per person (Stewart 1988). The temptation to prescribe a new medicine to treat each set of symptoms is very great and polypharmacy is a widespread occurrence in the elderly (Alexander et al 1985, Cartwright et al 1988). Polypharmacy is not only a doctor generated problem, but may be compounded by the concomitant of use of self-prescribed medicines by the elderly (Lamy 1982, Hale et al. 1987, Cartwright et al 1988). Of note is the fact that the doctor is often unaware that his patient may be using self-prescribed medicines and even medicines prescribed

by other doctors consulted concurrently (Kiernan et al. 1981, Price et al. 1986). Further compounding the problem is the fact that many self-prescribed medicines purchased over the counter may be polycomponent preparations.

Whilst polypharmacy is not necessarily a sign of inappropriate prescribing, it has been shown to be linked to a higher incidence of adverse drug reactions (Colt et al 1989,). In South Africa The Fifth Interim Report of the Commission of Inquiry into Health Services (Browne Commission, 1987) identified the excessive use of medicines as being potentially unsafe, inefficient and unnecessarily expensive.

1.2.2.4 LONG-TERM USE WITH FREQUENT REPEAT PRESCRIBING

Rest home or frail care centres are becoming a major component of the health care system for the elderly. In an American study, 55% of residents in 55 rest homes were found to be taking at least one psychoactive medicine (Avorn et al. 1989). For half of those residents with high anti-psychotic drug use there was, for at least one year, no physician participation in decisions regarding the patients' mental health. In addition, assessment of staff competence revealed a low level of comprehension of the purpose and side effects of commonly used psychoactive agents. It has been shown that regular review by consultant pharmacists of the medicines used by patients in a long-term care facility can reduce the overall use of drugs by as much as 33.8% (Cooper et al 1978).

Murdoch (1980) showed in his study of the prescribing patterns of urban general practice that long-term repeat prescribing may

account for 58.7% of all prescriptions for the over 65 age group and for just under 50% of all prescribing. Several studies have shown that often the patient receives his or her repeat prescription without seeing the doctor concerned. (Law et al 1976, Kiernan et al. 1981, Cartwright et al 1988). Research by Cartwright et al. (1988) revealed that the longer patients had been taking their medicine, the less likely they were to see the doctor when obtaining a repeat of their prescription. This was particularly true if the medicine concerned was a hypnotic, sedative or anxiolytic. Regular professional review of the elderly's medication profiles is important.

1.2.2.5 HIGH INCIDENCE OF ADVERSE DRUG REACTIONS

Drug induced illness is a significant problem in patients of all age groups. Between 2.9% and 9.4% of hospital admissions in the USA have been attributed to drug induced illness (Miller 1974, Caranosis et al. 1974, Colt et al. 1989). In South Africa, a prospective study by Cooke et al (1985) of 300 hospital admissions revealed that 4.6% of these were considered to be related to adverse drug reactions. Although adverse drug events within the community are more difficult to assess because their identification depends on spontaneous reporting, the incidence is reported to vary from 5% to 30% (Klein et al. 1984, Hutchinson et al. 1986).

It is well established that adverse drug reactions occur most frequently in the over 65 years age group (Greenblatt et al. 1982, Hutchinson et al. 1986, Castelden et al. 1988). Williamson and Chopin (1980) found that of patients admitted to the

Geriatric Medicine Departments in England, Wales and Scotland, 15,3% of prescribed drug takers exhibited an adverse drug reaction. As much as 36% of patients 65 years and older in a community general practice were deemed to be suffering from symptoms that were drug induced (Martys 1982). Similarly, spontaneous reports, both in England and in South Africa show that there is higher incidence of adverse drug reactions in the elderly than in other age groups (Report of UCT:Ciba-Geigy Medicines Safety Centre 1987, Castelden et al. 1988). Castelden et al. further point out that the drug-induced mortality rate is higher in elderly patients than it is in younger patients.

Drug induced illness is however, considered to be a preventable disease, and attention has been drawn to this fact by the World Health Organisation (1980) and the Royal College of Physicians (London, 1984). Both organisations emphasise that more rational prescribing and better informed use of medicines by both doctor and patient will help to reduce the incidence of drug induced disease in the elderly.

1.2.2.6 POOR COMPLIANCE

In its broadest terms, compliance can be described as the patient's adherence to a prescribed treatment regimen. Non-compliance has been recognised as a major problem and has been extensively researched, with figures for the elderly as high as 50% or more quoted in the literature (Wandless et al. 1979, Gryfe and Gryfe 1984, Morrow et al. 1988). Hulka et al. (1976) divided non-compliance into the following sub-categories:

Omission - a drug prescribed but not taken

Commission - a drug taken but not prescribed

Misconception - the schedule was misunderstood

Non-compliance - the schedule was rejected.

Although it is often difficult to establish what the causes of poor compliance are, five major factors have been identified (Hulka et al. 1976, WHO 1981, Lamy 1982):

1. Physical disability preventing the patient from using the medicines correctly. Severe arthritis or hand tremor may prevent the removal of the medicine from its container. Poor vision may impair reading the label instructions and swallowing difficulties may make it difficult to take large tablets.
2. The more drugs per patient, the greater the errors of omission and commission
3. The greater the complexity of the dosage schedule, the greater the errors of commission and misconception.
4. If the patient does not know or understand the function of all his drugs, errors of commission and misconception increase.
5. An inverse relationship exists between doctor-patient communication and compliance - where communication is good, there is a low level of all types of medication errors. Typically, non-compliance of the commission type, where the patient is taking a drug that has not been prescribed by the physician consulted, is frequently missed (Price et al 1986). It may be missed for 2 reasons:
 1. the doctor does not question the patient in this respect
 2. even when asked, the patient cannot accurately recall what the medicines are.

It has been estimated that between 4% and 35% of non-compliant elders may endanger their health by not taking their medication correctly (Stewart and Cluff 1972). The older patient is frequently stabilised long-term, on medication having a narrow therapeutic index. Any increase or decrease in the dose may have a destabilising and detrimental effect (Grymonpre 1988). The most commonly reported form of non-compliance is under-adherence to the dosage schedule which may result in sub-optimal treatment with subsequent high costs in terms of morbidity and monetary expenditure (Kiernan 1981).

Non-compliance of the "commission" kind may also result in treatment failure. Even herbal or "natural" remedies can be responsible for otherwise unexplained changes in normally well managed patients. For example, a case was reported to the Committee on the Safety of Medicines (United Kingdom) where "devil's claw" herbal remedy was thought to have destabilised an elderly, well controlled parkinsonian patient (The Pharmaceutical Journal of the Royal Pharmaceutical Society of Great Britain 1989).

1.2.3 STRATEGIES TO IMPROVE DRUG USE IN THE ELDERLY

1.2.3.1 EDUCATION OF HEALTH CARE PROVIDERS IN CARE NEEDS OF THE ELDERLY

Despite the fact that care of the elderly was recognised as a special problem as early as 1957, there has been a slow development of geriatric medical services in South Africa (Glajchen

1988). Only in recent years has any structured plan been formulated for the training of medical practitioners in the field of geriatric medicine (De V Meiring, 1988). In the USA and Canada, the first examinations for certification of geriatric medicine were held only in April 1988. In their report (1984) the Royal College of Physicians (London) emphasise the importance of adequate training of doctors, nurses, social workers and pharmacists if any impact is to be made on the high prevalence of adverse drug reactions in the elderly.

1.2.3.2 COMMUNICATION WITH AND EDUCATION OF THE PATIENT

Successful health care management requires a team approach with the co-operation of both the patient and his family. The most obvious indication of a patient's co-operation is the extent of his compliance. The doctor can aim to improve the patient's compliance by ensuring that he can cope with the packaging and formulation of the medicine, by confining the number of medicines to a minimum, by choosing simple dosage schedules, and most of all by communicating with the patient. Gardner et al. (1988) showed that patients do consider that detailed information regarding the safe use of their medication is important and that the more information communicated to them, the more satisfied they are in their relationship with their doctor and the better their compliance.

Communication can take the form of verbal or written information. Although the improvement may not be as great as for those with normal cognitive function, counselling of elderly patients with deficient cognitive function can significantly improve

their compliance (MacDonald et al. 1977). Woroniecki et al. (1982) and MacDonald et al. (1977) showed that 15 minutes of verbal counselling had a significant effect on patient's recall of drug information, even after eight to 12 weeks. Dodds (1986) found that the provision of written information alone had a significant and positive effect on patient compliance with antibiotic therapy. Other researchers (Regner et al. 1987, Culbertson et al. 1988) indicate that printed information together with verbal counselling is more effective and even preferred by patients. Memory aids, such as tear-off calendars and tablet identification cards together with verbal counselling have been found to significantly improve drug compliance in the elderly (Wandless and Davie, 1977)

1.2.3.3 COMMUNICATION OF THE NECESSARY INFORMATION

In the USA a National Council on Patient Education and Information (NCPIE) has been formed. In their report on "Priorities and Approaches for improving Prescription Medicine use by the Older Americans" (1987), the NCPIE consider improved communication within the entire healthcare network to be of prime importance. They have tried to improve communication of health care professionals by attempting to create a demand for more information. A country-wide media campaign encouraging the public to request more information about their medicines has been launched. To provide this type of service requires time and expertise. The pharmacist is the professional who is best placed and most accessible to do this. In Britain and America, the role of the pharmacist in patient education is being emphasised (WHO 1980, Lamy 1982, Gryfe and Gryfe 1984, Royal College of Physicians

1984, George 1987, Morrow et al. 1988). In their review, Morrow et al. (1988) also outline rules for the design of medication instruction and make recommendations on how these should be implemented.

1.2.3.4 IMPORTANT INFORMATION FOR THE DRUG-TAKING PATIENT

In order for medication instructions to be effective, they must be complete. Morrow et al. (1988) list 13 items of information they considered to be important:

1. the patient's name
2. the physician's name and telephone number
3. the medication's name
4. the medication's purpose
5. a brief description of how the medication works
6. warnings about foods and drugs to avoid when taking the medication
7. the form in which the medication is taken
8. the dose to take
9. how often to take the dose and at what times of day
10. how long to take the medication and whether a refill is required or optional
11. date of issue, shelf life of drug, and an explicit warning to destroy any remaining medicine after this date
12. most likely side effects
13. emergency telephone number

Gryfe and Gryfe (1984) and George (1987) each have a similar but shorter list, both omitting points 1, 2, 5, 10, 11 and 13. They

consider it important that the patient be fully informed on how to store his medication and to dispose of any that may be left over and George also recommends that the patient be advised on how to tell if the medicine is working or not. The NCPIC have made it the responsibility of the patient to be informed about his medicines and have prepared a "Medication Memo" for distribution to the public. The uncomplicated memo poses 5 major questions:

1. What is the name of the drug and what is it supposed to do?
2. How and when do I take it - and for how long?
3. What foods, drinks, and other medicines or activities should I avoid while taking this drug?
4. Are there any side effects and what do I do if they occur?
5. Is there any written information available about the drug?

In addition to covering those points most essential to ensure the safe use of medicines, the memo also makes provision in question 5, for the patient who wants more detailed information.

1.2.3.5 COMMUNICATION BY THE SOUTH AFRICAN HEALTH CARE PROVIDER

There has been very little research into this subject. In South Africa communication between doctor and patient may be poor because of language and cultural differences and consequently compliance may suffer. Gillis et al. (1987) found this to be the case and make a plea that more time be spent with patients explaining their treatment regimen prior to discharge from hospital.

A small study by Regensberg and Tanchel (1988) revealed that in South Africa pharmacists are particularly poor providers of in-

formation to patients. Of the 164 patients in their study group who had received information about their medicines, only 10 indicated that they had received it from the pharmacist. In addition 18% of all the patients interviewed claimed that "No-one" had given them any information about their medicines.

Duncan Reekie and Scott (1988) advocate that the pharmacist become more involved in self-medication by patients. They point out that 73.3% of all proprietary medicine sales during 1980 took place outside a pharmacy, and that the pharmacist is grossly under-utilised as a provider of information for non-prescription medicines. In his reply to their suggestions, Folb (1988) points out that in South Africa an adequate system for the provision of patient-directed drug information is lacking but is, however, a realisable goal.

In summary, the geriatric population poses particular problems of altered pharmacokinetics and dynamics, polypharmacy and poor compliance. The projected increase in size of the elderly population of South Africa underlines the urgency for more research into their health care management needs. Limited research in South Africa has shown that the incidence of adverse drug reactions in the over 65 year olds is higher than for any other age group and that communication between health care professionals and patients is poor, but there is a paucity of information available on the drug use patterns of the South African elderly. In the light of this the present study was undertaken with the following aims in mind.

1.3 AIMS

AIM 1

To determine the drug use pattern of a study sample of the South African elderly for both prescribed and self-prescribed medicine.

AIM 2

To determine the knowledge score of this study sample with respect to the medicines they are using.

AIM 3

To determine the participant characteristics and ascertain if there is any significant relationship between these and the drug use patterns and the knowledge scores of the participants.

AIM 4

To determine the amount of information conveyed to the participants via container labelling and ascertain if there is any significant relationship between this and the drug use patterns and knowledge scores of the participants.

CHAPTER 2

METHODOLOGY

2.1 INTRODUCTION

Data collection was facilitated by the administration of a structured interview to participants randomly selected from old age residences in the southern peninsular area of Cape Town.

The interview was divided into 4 main sections:

1. A closed question questionnaire designed to gather information about the participant's socio-economic status and the type of health care received by him.

2. An interview schedule with both open and closed questions, designed to gather information with respect to the drug use patterns of the study population and the level of knowledge that the participants have with respect to the medicines that they are using.

3. A container label assessment sheet to assess the amount of essential information conveyed to the participant via the container.

4. A cognitive function and a short term memory test to identify and eliminate those participants with impaired cognitive function.

The answers obtained were marked and coded in order to facilitate statistical analysis. The answers pertaining to the

participants' knowledge of their medicines were marked according to a set of Drug Profiles (See Appendix I) drawn up by the researcher. Statistical analysis and sorting were undertaken using the SAS™ system of statistical analysis. The data were tested for any significant relationships between participant characteristics, type of health care, drug use patterns, level of knowledge and label information.

2.2 QUESTIONNAIRE

The questionnaire (see Appendix A) was designed to gather information on participant characteristics. With the exception of questions 1, 10, 11, 15, 17 and 20, it was designed with closed questions but was administered and filled in by the interviewer.

Questions 1 to 13 are concerned with participant particulars and cover the following points: age, gender, marital status, cohabitants, drinking and smoking habits, level of education, social class and retirement status, income and dependency on state social pensions. Questions 14 to 20 involve the following aspects relating to health care utilised by the participant: state or private sector, frequency of visits, main supplier of medicines and private medical aid.

2.2.1. ADMINISTRATION OF QUESTIONNAIRE

Answers were ticked off by the interviewer in the appropriate answer blocks on the questionnaire. Answers were coded (See Appendix: Coding sheet 1) into coding blocks down the right-hand side of the page. One questionnaire sheet was used per participant.

2.2.2. DETAILS OF QUESTIONNAIRE DESIGN

Question 1. What is your date of birth?

Coded: 65 - 100

Age groups 1 - 8

This was the first of the six open questions included in the questionnaire. Each participant's age was calculated from his date of birth to the 31 December 1988, when all interviews were complete. Participants were placed into 5-year age group categories.

Question 2. What sex are you?

Coded: male = 1, female = 2

This question was included to determine if there were any sex-related differences in knowledge score and drug use patterns.

Question 3. What is your present marital status?

Coded: 1 - 4

This question was divided into 4 categories - Never married, divorced, widow or widower, and married. If a participant had previously lost his spouse and then remarried, he was marked as married only and not under both widow or widower and married categories. The objective of this question was to determine whether marital status has any influence on knowledge score and drug use patterns.

Question 4. Do you live alone?

Coded: Yes = 1, No = 0.

It was considered necessary to include this question as married people do not always live together and unmarried people may live with others. This question also served as a leader for Question 5. The objective of this question was to ascertain whether the participant's interaction with and sometimes reliance on a second party influences his knowledge score or drug use pattern.

Question 5. Who is living with you?

Coded: 1 - 3,0

This question was divided into 4 categories - Spouse, Friend, Other family and Not Applicable. Participants who answered "yes" to Question 4 were immediately marked "Not Applicable" for this question.

The hypothesis underlying this question was that people living with their spouse, particularly in a long term marriage, may be more dependent on the spouse and thus may have a lower knowledge score than those living with a friend or family member.

Question 6.a. Do you smoke tobacco at all?

b. If you smoke, how many pipe/cigars/cigarettes do you smoke in 24 hours?

Coded: a. Yes = 1, No = 0

b. 1 - 3,0

Part (a) of this question was included as a leader question, with the participant being required to answer "yes" or "no".

Part (b) was divided into 3 categories based upon the work of Van der Burgh (1979) plus a further category of "Not Applicable". If the participant answered "No" to part (a), then part (b) was immediately marked "Not applicable" and the interviewer proceeded to Question 7.

This question was included because of the influence of smoking on drug metabolism and on disease and therefore potentially on drug use.

Question 7.a. Do you drink any alcoholic beverages at all?

b. On average, how often do you have a drink?

Coded: a. Yes = 1, No = 0

b. 1 - 5, 0

Once again part (a) was designed as leader to part (b) with the participant being required to answer "yes" or "no".

Part (b) was divided into 5 categories based on the work of Van Der Burgh (1979) with an extra category of "Not applicable." If the participant answered "No" to part (a) of this question, then part (b) was immediately marked "Not applicable" and the interviewer proceeded to Question 8.

Determination of the drinking patterns of the elderly was not one of the aims of this study. This question was included to provide a rough guide to the extent of alcohol consumption. Some indication of the extent of alcohol consumption in the elderly was considered relevant because alcohol can interact with a large number of medicines, both prescribed and purchased over the counter.

Question 8. To what level did you complete your education?

Coded: 1 - 6

The six subdivisions used were based upon those employed by the Department of Education. The purpose of this question was to ascertain if the participant's knowledge score and medicine use were significantly influenced by his level of education.

Question 9. Are you fully retired?

Coded: Yes = 1, No = 0.

This question was included in the questionnaire to try to determine whether participants who were still gainfully employed had a significantly different pattern of medicine use when compared with those who were not.

Question 10. Before retirement what was a) your occupation

b) your husband's occupa-

tion

Coded: 1 - 5

01 - 20

This question was assessed according to the guide prepared by Schlemmer and Stopforth (1979). Questions 10 to 13 were intended to serve only as a rough indication of the social class and income of the participants.

Question 11. What is a) your occupation now

b) your husband's occupation now?

Coded: 1 - 5

01 - 20

This question was omitted if the answer to Question 9 was "Yes".

Question 12. What is your approximate income per MONTH?

Coded: 1 - 8

1 - 5

The answers were divided up into 8 categories. The minimum income indicated was that at which a white pensioner may apply for a social pension from the State. In those instances where the participant refused to answer this question, it was marked as a non-answer.

Question 13. Do you receive a State Old Age Pension?

Coded: Yes = 1, No = 0

This question was included so that some indication of spending power could be obtained from those participants who refused to answer Question 12.

Question 14.a. Do you have a regular GP?

b. When last did you consult him/her?

Coded: a. Yes = 1, No = 0

b. 1 - 3, 0

One of the objectives of this research was to determine if the type of health care received by the elderly, had an influence on their knowledge scores and drug use patterns. This question considered not only whether the participant was receiving health care from a private doctor, but also enabled assessment of the relationship between the time of the last visit and information recall.

Question 15. What is his/her name?

Coded: 000 - 999

The answers given here were coded according to a list which was drawn up as new names were given. This question was included to ascertain whether the patients of any one doctor had higher or lower than average Knowledge Scores.

Question 16.a. Do you ever go to any of the day clinics or state hospitals for treatment or check-ups?

b. When did you last visit one of these?

Coded: a. Yes = 1, No = 0

b. 1 - 3, 0

Apart from the fact that it considered health care received from the public sector, this question was identical to Question 14.

Question 17. Which one do you go to more often?

Coded: 000 -999

As for Question 15.

Question 18. Where do you usually get your medicines?

Coded: 1 - 4

001 - 999

Four categories of medicine supplier were allowed for here: private pharmacy, doctor, state clinic, "elsewhere". Patients do not necessarily receive their medicines at the place of consultation and the degree of counselling may vary according to the supplier. This question was included firstly to determine the major source of supply of the elderly's medicines, and secondly to ascertain whether the participant's knowledge score is influenced by the supplier of the medicines.

Question 19. Do you belong to a medical aid?

Coded: Yes = 1, No = 0

The objective of this question was to see whether the fact that the participant was receiving assistance with his medical costs had an influence on his medicine use.

Question 20. What is the name of your medical aid?

Coded: 000 - 999

The names given here were coded according to a list that was drawn up as new names were submitted. This question was included with a view to determining whether there was a correlation between the pattern of medicine use and the medical aid.

2.3 THE INTERVIEW SCHEDULE

The interview schedule (See Appendix C) was designed to gather information about the drug use patterns of the study group and to ascertain the level of knowledge that the participants have with respect to their medicines.

The questions in the schedule are either open ended or closed. Questions on drug use are closed with a selection of answers provided. Questions 4, 6, 10 to 18, 23 and 24 are concerned only with participant knowledge. The remainder are "combination" questions yielding information on both participant knowledge and drug use patterns. Question 25 is an exception, asking about the participants' satisfaction with the amount of information provided by health care professionals.

Some of the questions are marked "applicable" or "not applicable". Questions 11 to 16 have been marked this way as information on drug, food and alcohol interactions may not be available or the interactions not significant. Question 3 is marked "not applicable" if the medicine concerned is marketed in only one strength.

2.3.1 ADMINISTRATION OF INTERVIEW SCHEDULE

After the interview schedule was compiled, it was tested on a trial group of 5 participants in an attempt to find any serious points of misunderstanding in the wording of the questions. Only minor alterations were found to be necessary.

The interview schedule questions were printed onto cards. During the interviews, the questions were read off the cards by the interviewer who then entered the answers on separate answer sheets (see Appendix D). After completion of the interviews, the answers given were "marked" against a set of drug profiles and the knowledge score and drug use pattern details coded according to a coding sheet (See Appendix E).

The participants were required to answer all the schedule questions only if they had used medicines in tablet or capsule form within the 2 weeks prior to the interview. Medicines which the participants used regularly, but which they had not used within the preceding 2 week period or were excluded as they were not tablets or capsules were marked as "Additional Medicines".

2.3.2 DETAILS OF INTERVIEW SCHEDULE DESIGN

2.3.2.1 PATTERNS OF DRUG USE

As indicated in the literature review drug consumption by the elderly is characterised by a high per capita use of medicines, and a tendency to long term use. Although not necessarily different from the rest of the adult population, use of self-prescribed medicines and poor compliance are complicating factors in the management of the drug regimens of the elderly.

The questions of the interview schedule were designed to investigate the following:

1. The range and popularity of medicines used by the elderly and which of these are prescribed or self-prescribed.
2. The per capita use for all medicines, prescribed medicines and self-prescribed medicines.
3. The extent to which the elderly change their dosage regimens.
4. The length of time for which the elderly use their medicines.

2.3.2.2 KNOWLEDGE OF MEDICINES USED

The National Council on Patient Information (USA) (See Appendix) recommends that in order to use medicines safely, patients must know several facts about every drug taken. The Council lists these as follows:

1. The name of the drug and what it is supposed to do
2. How, when and how long to take it
3. Food, drinks and other medications to avoid
4. Side effects and what to do if they occur
5. What written information is available on the medicine concerned

These recommendations are used as the basis for the knowledge score in this study. Most of the criteria listed by the National Council on Patient Information can be subdivided into more than 1 point as shown below. Each subdivision has been allocated a score. Points 1a through to 3c were given a score of 2 whilst points 4a, 4b and 5a were given a score of 1. The latter 3 points were given a lower score because it was considered that a lack of knowledge of these would have a less significant effect on the outcome of treatment. Furthermore, as can be seen in the interview schedule, many of the points 1a to 3c can be subdivided further. For example: "Drug Name" must take into consideration not only the name but also the strength used.

KNOWLEDGE SCORE: ALLOCATION OF POINTS

	Score
1.a. Drug name	2
b. What the drug is supposed to do.....	2
2.a. Quantity of medicine taken at each dose.....	2
b. Manner in which medicine should be taken.....	2
c. Dosage interval.....	2
d. Duration for which medicine should be taken.....	2
3.a. Specific foods to avoid.....	2
b. Alcohol to be avoided.....	2
c. Other medicines (S2* and below) to avoid.....	2
4.a. What side effects can be expected.....	1
b. What to do if a side effect is experienced.....	1
5.a. What written information may be available.....	1

Total Knowledge Score possible	21

(* - Schedule 2 as defined in the Medicines Control Act, No. 101 of 1965)

If all the questions of the interview schedule are answered, the maximum possible knowledge score is 21. If the questions concerning avoidance of alcohol, other medicines and particular foods become "not applicable", then the maximum knowledge score possible is 15. Each participant's final knowledge score is expressed as a percentage of the maximum possible for that drug.

2.3.2.3 DETAILS OF QUESTION DESIGN

Question 1. - Within the past 2 weeks have you used any medicines prescribed to you by a doctor? (Yes or No)

Coded: yes = 1, no = 0

Being a closed answer question the participant was required to answer "Yes" or "No". This is a drug use pattern question. It serves as a marker indicating those participants who used prescribed medication.

Question 2. - Can you name them for me?

Knowledge Score Question 1a.

Coded: 2, 1 or 0

As the interviewer had no access to patient records and therefore had no prior indication of what answers to expect, this was designed as an open ended question. In order for the participant to score 2 points he had to clearly, and without reference to the tablet container label, give the name of the medicine that he was using. The participant was required to give either the trade name or the generic name in order to score. No extra points were scored if both trade and generic names were known.

In those cases where the medicine is available in 2 or more strengths, the participant was awarded only 1 point for stating the name and received his second point only if he answered question 3 correctly.

The participant scored 0 if he could not remember the name without referring to the container or if the name he mentioned was incorrect when compared with that on the container.

Question 3. - Can you tell me what strength of Drug 1 (2 etc) you are using?

Knowledge Score Question 1a.

Coded: 1 or 0

Applicable = 1, not applicable = 0

This was also designed as an open ended question for the same reason given for Question 2. This question was marked "not applicable" if the drug is marketed in only one strength. One point was scored for stating the medicine strength correctly. A score of 0 was allocated if the answer was incorrect or if it was not required.

In those cases where an answer was not required, then the "not applicable" marker indicated that the total knowledge score excluded the points allowed for this question.

Question 4. - Can you tell me what you are using Drug 1 (2 etc) for?

Knowledge Score Question 1b.

Coded: 2 or 0

This was designed as an open ended question, as it was impossible to anticipate all possible answers for the medicines likely to be used by the elderly.

The accuracy of the participant's reply was assessed against the indications stated in the drug profile for the medicine under consideration. Detailed explanations were not required with short answers of 2 to 3 words considered sufficient. In order to score the full 2 points, the participant had to specify the site of action of the drug or name the disease which was being treated, for example: heart-pain tablets or angina tablets. Incorrect answers or "I dont know" scored 0.

Question 5. - How often do you take a dose of this medicine?

Knowledge Score Question 2c.

Coded: Prn use = 1, Not prn use = 0

Frequency category - 01 to 10

Knowledge score - 2, 1 or 0

This is a drug use pattern and a knowledge score question. For ease of coding, it was made a closed question with the answers divided into 2 categories. The first category established whether the medicine was used on a regular or irregular basis (not prn use or prn use respectively). The second category was divided into 10 sub-categories of dosing intervals as follows:

7 times & more per day (01)	6 times a day (02)
4 times a day (03)	3 times a day (04)
twice daily (05)	once daily (06)
4 to 6 times a week (07)	2 to 3 times a week (08)
once a week (09)	less than once a week (10)

When marking the knowledge score, the accuracy of the participant's answer was assessed against the instructions on the container label. This applied even if the dose on the label was outside the normal dose range specified in the drug profile as it was assumed throughout this study that the participant's doctor had made the correct diagnosis and had prescribed the correct medicines at the correct doses for that individual. In those instances where the label instructions were not available or non-specific (eg. Take as directed) then the participant scored if his dosage schedule fell within the normal dose range indicated in the drug profiles.

One point was allocated for correctly stating whether the medicine was used only as needed or was used on a regular basis. In those cases where the participant needed to use the drug only as required, then it was expected that he be able to specify the maximum dose permitted in 24 hours. This point was covered in Question 6 of the schedule. A second point was awarded for correctly stating the dosage interval. The participant scored 0 for an incorrect answer or if it was apparent that he had no knowledge of the dosage interval.

Question 6. - Can you tell me what is the maximum number of doses that you may take in 24 hours?

Knowledge Score 2c

Coded: 1 or 0

Again this was made an open ended question as it was impossible to anticipate all possible answers. As indicated at Question 5, this question was only applied to those participants who were

using their medicines on a "only as required" basis. Accurate responses were expected and even answers that gave a quantity less than that normally recommended as a maximum were marked incorrect. This was done as under dosing may lead to treatment failure. Incorrect answers and "I dont know" were allocated a score of 0.

Question 7. - How much do you take each time?

Knowledge Score 2a.

Coded: 2 or 0

Dose increased = 3, Decreased = 2, Unchanged = 1,

Not indicated on label = 0

This was made a combination drug use pattern and knowledge score question. It is an open ended question for the same reasons given for Questions 4 and 6. In marking the knowledge score, the instructions on the label were given precedence over those in the drug profiles as the dose is frequently tailored to the person's needs. If the participant's answer differed in any way from the label or the drug profile instructions, then a score of 0 was allocated. Correct answers received a full score of 2 points.

In assessing compliance, the answer given here was considered together with the answer for Question 5. Any changes were marked as one of the following: increased, decreased, unchanged or not indicated.

Question 8. - How do you take it?

Knowledge Score 2b

Coded: 2, 1 or 0

Manner categories Food/liquid - 10 to 33

Tablet/capsule - 1 to 5

Again this was made a closed question for ease of coding and marking. The possible answers were divided into 3 main categories. The first - Food - took into consideration whether the participant took the medicine on a full stomach or an empty stomach or either. The second category - Liquid - assessed whether he took the medicine with water or any other type of drink or neither. The third category considered whether the participant took the tablet or capsule whole, sucked it, chewed it, crushed it or dissolved it before swallowing it.

Once again the container label instructions were given priority, but if there were no instructions on the manner of use, then the answer was compared with the drug profile. The participant was allocated a score of 1 for answering both food and liquid categories correctly and one point for answering the tablet/capsule category correctly. The maximum scored was 2 with incorrect answers scoring 0.

Question 9. - How long have you been using this medicine?

Knowledge Score 2d

Coded: 1 or 0

Time Interval category - 1 to 10

This is a combination knowledge and drug use pattern question. It was made a closed question for ease of coding. The answers

were divided into 10 time interval categories which were coded from 1 to 10.

1 to 5 days (1)	1 to 5 years (6)
6 to 14 days (2)	6 to 10 years (7)
14 days to 1 month (3)	11 to 15 years (8)
1 to 6 months (4)	16 to 20 years (9)
7 to 11 months (5)	more than 20 years (10)

The time interval indicated by the participant was compared with that specified by the container label or the drug profile. If it fell within that recommended for that dose and indication, then the participant scored 1. No points were scored if the duration of use stated by the participant was greater than that recommended. In those instances where there was no clear indication in the drug profiles, then the participant was given the benefit of the doubt and awarded a full score of 1 for his answer.

Question 10. - Do you know, what is the recommended length of time for which you should carry on using this medicine?

Knowledge Score 2d

Coded: 1 or 0

This knowledge score question was designed as an open ended question as it was impossible to anticipate all possible answers. Once again, the answer was compared with the label instructions or with the drug profile. The participant was required to be specific as use of medicine for periods longer than recommended may lead to habituation or toxic effects. Use for a shorter period of time may lead to treatment failure.

In those instances where the duration of use was not clearly stated in the drug profile, participants who indicated that the duration was dependent on regular review of their case by their doctor were awarded a full score.

Question 11. - a. Have you been cautioned about other medicines that you should be careful about taking while you are using this medicine? (Yes or No.)

b. Can you name them for me?

Knowledge Score 3c

Coded: 1 or 0

Part (a) was a closed question with a "yes" or "no" answer required. This answer was not directly included in the participant knowledge score. If answered "yes" then the interviewer proceeded to part (b). An answer to part (b) was not required if the participant answered "no". The interviewer then proceeded to Question 13 of the schedule. However if an answer to part (b) was applicable, then the participant was automatically allocated a score of 0.

In order to score, the participant was required to clearly indicate which medicines he should avoid whilst being treated with the drug under review. The participant was not expected to name all possible interacting drugs, but he was expected to give some indication at least of the type of medicine (eg. Cold and 'flu medicines).

If the medicine under review was Schedule 3 and above, then the participant was expected to know which Schedule 2 medicines and

below he should avoid. The converse also applied. If the medicine under review was Schedule 2 and below, then the participant was required to indicate that he knew that it may interact with certain prescribed medicines. Those medicines classified as Schedule 2 and below may be purchased without a prescription. It is in the interests of the purchaser to be informed as to potential interactions involving these medicines. Although the community pharmacist is responsible for the sale of Schedule 2 medicines, he does not have access to full patient profile records and may not be aware of all the medicines administered to the person buying the medicine.

If the participant answered "yes" to part (a) of this question and then gave the name or type of at least one medicine that could interact with the medicine under review, then he scored 1. If he answered "yes" to part (a) but could not give a satisfactory response to part (b), then he scored 0. He scored 0 if he answered "no" or "I dont know" where an interaction was likely.

Question 12. - Why should you be careful about these medicines?

Knowledge Score 3c

Coded: 1 or 0

Applicable = 1, Not Applicable = 0

Again this knowledge question was made open-ended because it was impossible to anticipate all answers. It was felt that the participant would make more of an effort to avoid medicines likely to interact with his medication if he knew why they would interact and what would happen to him if he took them concurrently. Detailed explanations were not required with short,

simple answers such as "It will make my high blood pressure worse" considered sufficient for the participant to score 1.

Questions 11 and 12 were excluded from the knowledge score if no drug interactions were indicated in the drug profiles. These questions were marked "applicable" or "not applicable". If the questions were marked "Not applicable", then the score points allocated to them were not included in the final knowledge score.

Question 13. - a. Have you been cautioned to be careful about eating any particular foods or non-alcoholic drinks or beverages while you are using this medicine? (Yes or No.)

b. What are they?

Knowledge Score 3a

Coded: 1 or 0

Part (a) of this question was designed as a closed question. Once again, it played no part in the knowledge score but acted as a leader question. If the participant answered "yes", the interviewer proceeded to part (b) of the question; if "no" the interviewer proceeded to Question 15.

Part (b) was open ended as it was impossible to have a closed question that covered all possible answers for all medicines. The participant was not required to list all foods that could interact with the medicine under review but was required to name at least one type of food that should be avoided. Once again the answers were compared with the recommendations laid out in the drug profiles and correct answers scored 1.

Question 14. - Why should you be careful about these foods?

Knowledge Score 3a

Coded: 1 or 0

Applicable = 1, Not Applicable = 0

Again this was made an open-ended question for the same reason as cited in Question 13.b. It was felt that compliance here would be improved if the participant was fully aware of any drug-food interactions and the potential outcome if the agents were consumed concurrently. The participant was awarded a knowledge score of 1 for answering the question correctly.

Questions 13 and 14 were marked "not applicable" and their points excluded from the Knowledge score if there was no indication in the drug profiles of possible interacting foods.

Question 15. - Have you been cautioned to be careful for any reason about consuming alcohol while you are taking this medicine? (Yes or No.)

Knowledge Score 3b

Coded: 1 or 0

If the participant answered "no" to this closed question, then an answer to Question 16 of the schedule was not required and the interviewer proceeded to Question 17. The answer was compared with the specifications in the drug profile and correct answers were allocated a score of 1.

Question 16 - Why should you be careful about consuming alcohol with this medicine?

Knowledge Score 3b

Coded: 1 or 0

Applicable = 1, Not Applicable = 2

Participants were expected to know any important drug-alcohol interactions and their possible outcome. A detailed answer was not required. A simple explanation of 2 to 3 words (eg. It will affect my driving) was sufficient if in accordance with the drug profiles. If the answer was correct then the participant scored 1.

Questions 15 and 16 were marked "applicable" or "not applicable" for each medicine under consideration. The score points for these questions were excluded from the maximum knowledge score if there was no indication in the drug profiles of a possible interaction.

Question 17. - a. Do you know of any side effects or unwanted effects that may arise out of the use of this medicine? (Yes or No.)

b. Can you tell me what these side effects may be?

Knowledge Score 4a

Coded: 1 or 0

Part (a) was a closed leader question which did not count toward the knowledge score. If the participant answered "no", then the interviewer proceeded straight to Question 18 and the participant was allocated a score of 0 for the entire question.

Part (b) was open ended as it was impossible to allow for all possible answers for all medicines. The participant was not required to list all possible side effects, but to indicate he was aware the drug could give rise to side effects and to name one or 2 of the more serious or common side effects. If his answer was correct when compared with the side effects listed under the drug profile, then he scored 1. In those instances where the participant's description of a possible side effect was open to interpretation, the answer was assessed in consultation with a pharmacologist before being allocated a score.

Question 18. - What would you do if you experienced any of these side effects?

Knowledge Score 4b

Coded: 1 or 0

Again this was made an open ended question as it was impossible to anticipate all possible answers. It was felt that as the members of the public are not trained in pharmacology they must contact a health care professional who can assess the seriousness of the side effect in their particular case. For prescribed medicines, participants who indicated that they would stop or continue with the medicine without consulting their doctor or pharmacist scored 0. Answers open to interpretation were assessed in consultation with a pharmacologist and correct answers scored 1.

Question 19 - Are there any other medicines prescribed to you in the past 2 weeks that you cannot remember the names of? (Yes or No.)

Coded: Yes = 1, No = 0

This was made a closed, leader question to Question 20. It was not included in the knowledge score. If the participant answered "no" then the interviewer proceeded to Question 22.

Question 20 - How many are there?

Coded: 01 to 99

This was an open ended question and played no role in the knowledge score. It served as a leader for Question 21. It was also used as an indicator as to the number of medicines whose names were not remembered by the participant.

Question 21. - Can you tell me what each one is used for?

This question being identical to Question 4, the interviewer proceeded next to Question 5. For each new medicine, the participant was required to answer Questions 5 to 18 of the schedule.

Question 22. - Within the past 2 weeks have you used any medicines that were NOT prescribed to you by a doctor? (Yes or No.)

Coded: Yes = 1, No = 0

This was a closed, drug use pattern question. It served as a marker indicating those participants who used self-prescribed medicines. If the answer was "yes" then the interviewer returned to Question 2 and the participant was required to answer Questions 2 to 18 for each new self-prescribed medicine. If the participant answered "no" the interviewer proceeded to

Question 23.

Question 23. - Do you ever "Read up" about your medicines to try to find out more information about them?

Knowledge Score 5a

Coded: Yes = 1, No = 0

This was a closed knowledge score question. Participants answering "yes" scored 1 and participants answering "no" scored 0.

Question 24 - Where do you normally get this information?

Coded: 00 to 99

This is not a knowledge score question. It was designed as an open ended question as the number of possible answers is considerable. The answers given were drawn up into a list with each new answer allocated a new code number.

Question 25. - Do you feel that you are sufficiently informed about your medicines to enable you to use them safely? (Yes or No.)

Coded: Yes = 1, No = 0

This closed question was not a knowledge score question, but was included in the interview schedule to serve as a point of comparison between the public's perception of the amount of knowledge they need to have in order to use their medicines safely and what the experts feel they should know.

2.4 LABEL SCORE

(See Appendix D - Interview Schedule Answer Sheets)

The label on the container is often the only reference immediately available to the patient on how to use his medicine. For this reason it was decided to include a special analysis of the container labels in this research work. Although it was recognised that label size is a limiting factor, it was felt that an "ideal" label should contain certain essential pieces of information. In South Africa, the Medicines Control Act (No. 101, 1965) specifies what details must be shown on the label of dispensed medicines. However, it was decided that these specifications alone are insufficient to provide the patient with enough information to use his medicine properly. Thus the requirements laid out in the Medicines Control Act were reviewed and expanded and a new set of what was considered to be the minimum labelling requirements for all medicines drawn up. Each of these requirements was allocated a score with a maximum of 10 points for an ideal label. The points were allocated as follows:

1. Legibility

Question 1. Can you read me the name on the label?

Score: 1 or 0

Question 2. Can you read me the directions on the label?

Score: 1 or 0

To determine the legibility of the label, the participant was asked to read with his normal reading glasses, where necessary, first the name of the medicine and then the instructions to the interviewer. If the participant was able to read these, then the label was allocated a score of one point for each, but no points were scored when the participant found the label illegible.

Label legibility is essential if the information provided is to be of any use to the patient. Whilst most labels are accepted as being legible to the majority of the medicine using population, this may not be the case with the elderly who frequently have failing eyesight. It was considered necessary to determine what proportion of the elderly cannot use these labels by checking their ability to read them with their normal reading aids.

2. Name of the medicine

Question 3.a. Trade/Generic and strength

Score: 1 or 0

Question 3.b. Descriptive name (eg. Heart Tabs)

Score: 1 or 0

The specifications for the medicine name were subdivided into trade or generic name and medicine strength where applicable, and descriptive name - for example "Heart Tablets". It is required by the Medicines Control Act (No. 101, 1965) that the proper name always appears on the label as it is a means of identification of the medicine. A descriptive name was also considered to be important as the elderly frequently use more than one medicine for more than one indication and therefore to reduce confusion, a descriptive name is essential.

One point was allowed for the proper name of the medicine and one point for the descriptive name. In those instances where the proper name did not indicate the strength of the medicine, and the medicine is marketed in more than one strength, then no point was awarded for the proper name.

3. Directions

This was subdivided as follows:

Question 4.a.Quantity to be taken at each dose.....Score 1 or 0

Question 4.b.Frequency of dosing.....Score 1 or 0

Question 4.c.Manner in which dose should be taken..Score 1 or 0

Question 4.d.Duration of use.....Score 1 or 0

Although such detail is not specified, it is also required by the Medicines Control Act that some directions on how to use the medicine are shown on the container label. It was considered that in order for the patient to have a safe working knowledge on how to take his medication, all directions should cover the 4 points listed above. In those cases where one of these directives was found to be omitted, it was allocated a score of 0. Instructions such as "Take as directed" or "Take when required" were not considered to be acceptable and the label was allocated no points for these directions. In the case of tablets and capsules the words "Take" or "Drink" were considered to be sufficient to imply oral consumption.

4. Name of the patient

Question 5. Patient Name

Score: 1 or 0

This is also required by the Medicines Control Act. It was considered to be important as it helps to prevent confusion in a house or an institution where more than one member is receiving medication. Those container labels which did not have the patients name on them were allocated a score of 0. However, medicines at or below schedule 2, were exempt from this requirement as they may be purchased over the counter or even at supermarkets.

5. Name of the dispenser

Question 6. Dispenser's Name

Score: 1 or 0

This is a requisite of the Medicines Control Act as it enables the user or any other person to refer to the dispenser should any problems arise with respect to the use of the medicine. In the case of medicines which could be purchased over the counter, the label was checked to see that the manufacturer's name was given. Any label which did not indicate either the dispenser's or the manufacturer's name was allocated a score of 0.

All of the points scored by each label were added up and then each label was allocated a label score expressed as a percentage mark of the maximum label score of 10.

In addition to the label score requirements, the medicine label was also checked for three other points which were not included in the label score, namely whether any "auxiliary " labels were attached, how the label was presented, and the type of health care service that had been responsible for dispensing the medicine.

Auxiliary labels are frequently sources of extra information on how to use or store the medicine. However, not all dispensers consistently use these labels, but prefer to counsel the patient verbally. Since there is controversy surrounding the effectiveness of these labels as contributors to the patient's overall knowledge of his medicine they were not included as a labelling requisite (Regner et al. 1987, Brown et al. 1988).

The presentation of the label was considered to be an important point to check as this could affect the legibility of the label. Thus each label was checked to see whether it was handwritten, typed on a standard typewriter or a matrix-dot printer, commercially printed or a combination of both handwriting and printing as is frequently found on the labels from hospitals or clinics. This was then compared with the score for legibility to ascertain whether any significant relationship could be found between the 2 points.

The "health care type" check was included to compare the label scores of different suppliers. They included the retail or community pharmacist, the dispensing doctor, the state services and as a separate category "other" suppliers of medicines such as supermarkets.

2.5 COGNITIVE FUNCTION AND SHORT TERM MEMORY

Declining mental function, which may be encountered in the elderly, will affect the ability to comprehend medication instructions, and a poor short term memory will impair the ability to recall and comply with these instructions. However, if there is no deficiency in either of these mental functions, the elderly patient may, with the use of certain memory aids, be capable of assimilating and complying with full and detailed medication instructions (Tymchuck et al. 1986, Ciocon et al. 1988, Leirer et al. 1988).

As this work concentrates mainly on the patient's knowledge with respect to his medication, and adherence to medication instruc-

tions, cognitive function and short term memory were assessed utilising the Abbreviated Mental Test as drawn up by Hodkinson (1972) and modified for the South African population by the Geriatric Unit, University of Cape Town (Appendix F). This test was chosen because it is very easy to administer and despite its brevity, the Abbreviated Mental Test, when compared with other longer and more complex cognitive function tests, has been shown to be sufficiently powerful for the purposes of such research work.

This test was modified by the Geriatric Unit on 3 points. The first was the requirement that the participant recall the dates of World War 2 and not World War 1 and the second, that the full name, including initials, of the State President and not that of the present Monarch be given as South Africa does not have a monarchy. The third alteration focussed on short term memory recall. At the start of the test, the interviewer asked the participant to identify 3 common and easily recognised articles. These were then concealed from the participant, and at the end of the test he was asked if he could remember them. For each one correctly named, one point was allocated.

Of the Abbreviated Mental Test scores, a score of below 7 was taken to be an indication of significantly impaired cognitive function. Those participants scoring below 7 were not included in the study.

2.6 SELECTION OF PARTICIPANTS

Participants had to meet the following 4 inclusion criteria:

- a. 65 years or more in age
- b. not under daily drug supervision
- c. be fully responsible for own health care management.
- d. be fluent in English

2.7 SELECTION OF STUDY SAMPLE

The Department of Health and Welfare regularly inspect a number of homes, flats and service centres for the aged. A list of these institutions was obtained from the Department and a second list of only the flats was compiled.

The distribution of the flats was plotted onto a map of the Cape Peninsula area and only those flats within a 20km radius of the interviewer's residence in Plumstead were chosen for the study sample. The manager of each residence was visited and a complete list of all residents over the age of 65 years was obtained. The names of residents known to be away on holiday were excluded from these lists. The surnames on the lists were sorted alphabetically. In the event of both husband and wife qualifying for inclusion in the study sample, the name of the husband was placed first on the list. If 2 different members of a residence had the same surname, then they were listed alphabetically according to their initials. The names were then numbered consecutively. Using a random number table a third of the names were selected for inclusion in the study sample. If the names of both husband and wife were selected, then only the spouse chosen

first was included in the sample and another participant was selected in place of the second spouse. This was done in an attempt to eliminate bias because of previous exposure to the questions of the interview, especially to those of the cognitive function and short term memory tests.

2.8 DATA COLLECTION AND ANALYSIS

2.8.1 DATA COLLECTION

Data collection commenced in June 1988 and was completed by December 1988. All the interviews were conducted by one interviewer (myself).

After selection of the study sample for each residence, the interviewer visited each residence and approached each selected participant individually. The interviewer confined her visiting times to after 9.00am to 12.00 noon and then from 3.00pm to 6.00pm in the afternoon. These visiting hours were chosen as it was found that many of the retired elderly are not ready to receive visitors early in the morning and that they frequently rest after lunch. The afternoon visiting time was extended as late as 6.00pm in order to try and include those participants who were still working a full 8 hour working day. No interviewing was done on the weekends.

The interviewer went from flat to flat knocking on the doors of the selected participants. When the participant answered the door, the interviewer introduced herself as a qualified pharmacist. She then explained that she was, under the supervi-

sion of the medical school at the University of Cape Town, conducting research into the use of medicines by the elderly and asked the participant for his or her co-operation. The interviewer emphasised the fact that the interview would be confidential and that participants' names would not appear in the final research report.

Depending on the number of medicines used by the participant and the degree of co-operation of the participant, each interview lasted from between twenty minutes to one and a half hours. If the participant had difficulty understanding any of the questions during the interview, then the interviewer expanded on the question until both parties were satisfied that the participant had fully understood what was being asked. Similarly, if the participant expressed curiosity as to the research work and why it was being conducted, the interviewer did her best to satisfactorily answer questions.

As it frequently required several days of visits to complete one residence, the 3 articles used for the short term memory test were changed regularly. Examples of articles used for this test are an onion, an orange, an apple, a banana, a pencil, a ruler, a bunch of keys, a bull-dog paper clip, a comb or a ballpoint pen. Some of the participants were found to be blind so it was essential that items that could be easily identified by feel or smell were chosen. The items were changed approximately every third day in an attempt to prevent participants not yet visited from learning the names of the items in the test from those who had already completed the interview.

If a selected participant was not found at home, then the interviewer called at least once again. If the participant was occupied at the time that the interviewer knocked, then an appointment was made for completion of the interview. Participants who were not willing to participate were not included.

2.8.2 DATA ANALYSIS

Data analysis commenced in February 1989. Each participant was allocated an identification number from 1 to 265. The interview schedule answer sheets, and questionnaire were marked and the answers were coded according to a set of coding rules drawn up prior to commencement of the analysis. The coded answers were then entered onto the computer data capture sheets used by the Medical Research Council Institute for Biostatistics. The data for the schedule and the label analysis were entered separately from those obtained from the questionnaire and cognitive function and short term memory tests.

In the middle of July 1989, the coded sheets were sent to the Medical Research Council Institute for Biostatistics for analysis. Analysis was undertaken using the SAS[®] computer package. Detailed analysis of all possible data combinations was not attempted. In most instances, parametric tests were used as the data groups were of sufficient size to allow for the use of these more powerful tests. A p value of less than 0.05 was regarded as statistically significant. The following tests were used:

1. Pearson's Correlation Coefficients. A parametric test for correlation between 2 samples of data.

2. Student's - t Test. A parametric test for significance between 2 independent samples.
3. Chi-square Test. A non-parametric test for association between 2 variables.
4. Analysis of Variance. An analysis of variation among more than 2 independent samples.

CHAPTER 3

RESULTS

3.1 PATIENT CHARACTERISTICS

These results are presented in Tables 3.1.1. to 3.1.12. Only the total number of participants (Total (n)) according to gender and age group is given in each table whereas, the number of participants conforming to each characteristic is expressed as a percentage of each gender and age group. Although the subdivision of data according to age groups may in some instances appear excessive for the purposes of this study, these details have been included in the hope that they may be of value to other researchers in the field of geriatrics.

3.1.1 AGE

Table 3.1.1.

A total of 260 participants with their ages ranging from 65 years to 93 years, mean age 77 years was interviewed. Age distribution was similar for both sexes. The age distribution of all participants is shown graphically in Figure 3.1.1.. Whilst the smaller numbers in the over 85 year age groups are predictable on the basis of increased mortality, the relatively low number of participants in the below 70 years age group is probably explained by the manner of selection. The only participants were those living in old age residences which are entered voluntarily. People under 70 years are probably less likely to desire the greater social security provided by these residences.

PATIENT CHARACTERISTICS

Table 3.1.1 : Age distribution

GROUP	PERCENT		
	ALL	MALE	FEMALE
TOTAL (n)	260	49	211
65 - 69 years	10.4	8.2	10.9
70 - 74 years	23.8	26.4	23.2
75 - 79 years	30.4	28.6	30.8
80 - 84 years	26.5	28.6	26.5
85 - 90 years	8.1	8.2	8.1
90 - 94 years	0.8	0	0.8

Table 3.1.2 : Relationship between marital status and gender/age (years)

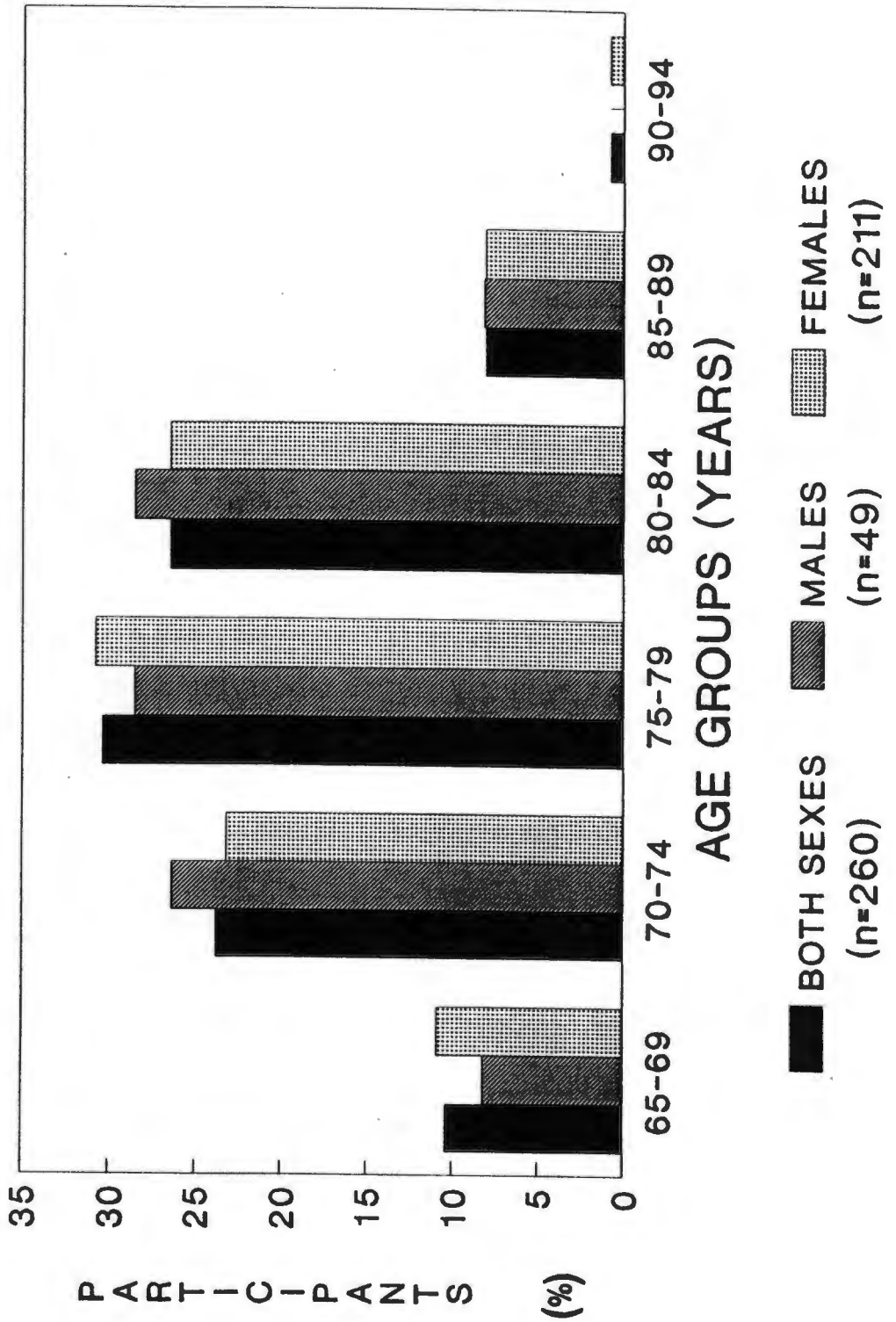
GROUP	PERCENT FOR GENDER AND AGE GROUP (Years)									
	ALL	MALE	FEMALE	65-69	70-74	75-79	80-84	85-89	90-94	
TOTAL (n)	260	49	211	27	62	79	69	21	2	
Never married	12.7	6.1	14.2	18.5	16.1	8.9	11.6	14.3	0	
Divorced	7.3	4.1	8.1	14.8	9.7	7.6	2.9	4.8	0	
Widow/er	57.3	24.5	64.9	44.5	50	55.7	66.7	66.7	100	
Married	22.7	65.3	12.8	22.2	24.2	27.8	18.8	14.2	0	

Table 3.1.3 : Relationship between co-habitants and gender/age (years)

GROUP	PERCENT FOR GENDER AND AGE GROUP (Years)									
	ALL	MALE	FEMALE	65-69	70-74	75-79	80-84	85-89	90-94	
TOTAL (n)	260	49	211	27	62	79	69	21	2	
Live Alone	75.8	34.7	85.3	66.7	74.2	72.2	85.7	85.7	100	
Spouse	23	65.3	13.3	25.9	24.2	27.8	14.3	14.3	0	
Friend	0.4	0	0.5	3.7	0	0	0	0	0	
Other Family	0.8	0	0.9	3.7	1.6	0	0	0	0	

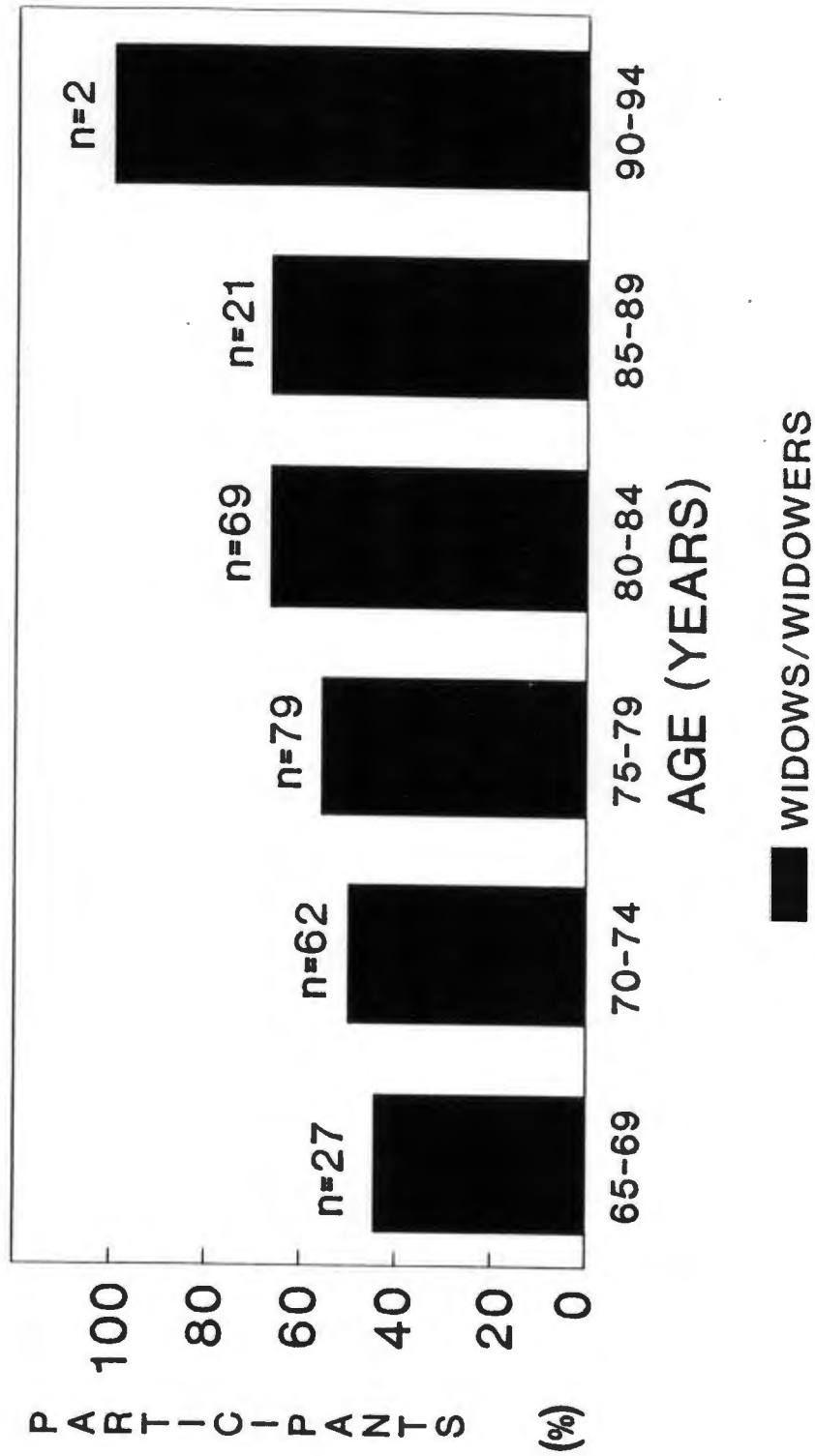
AGE DISTRIBUTION

Fig. 3.1.1.



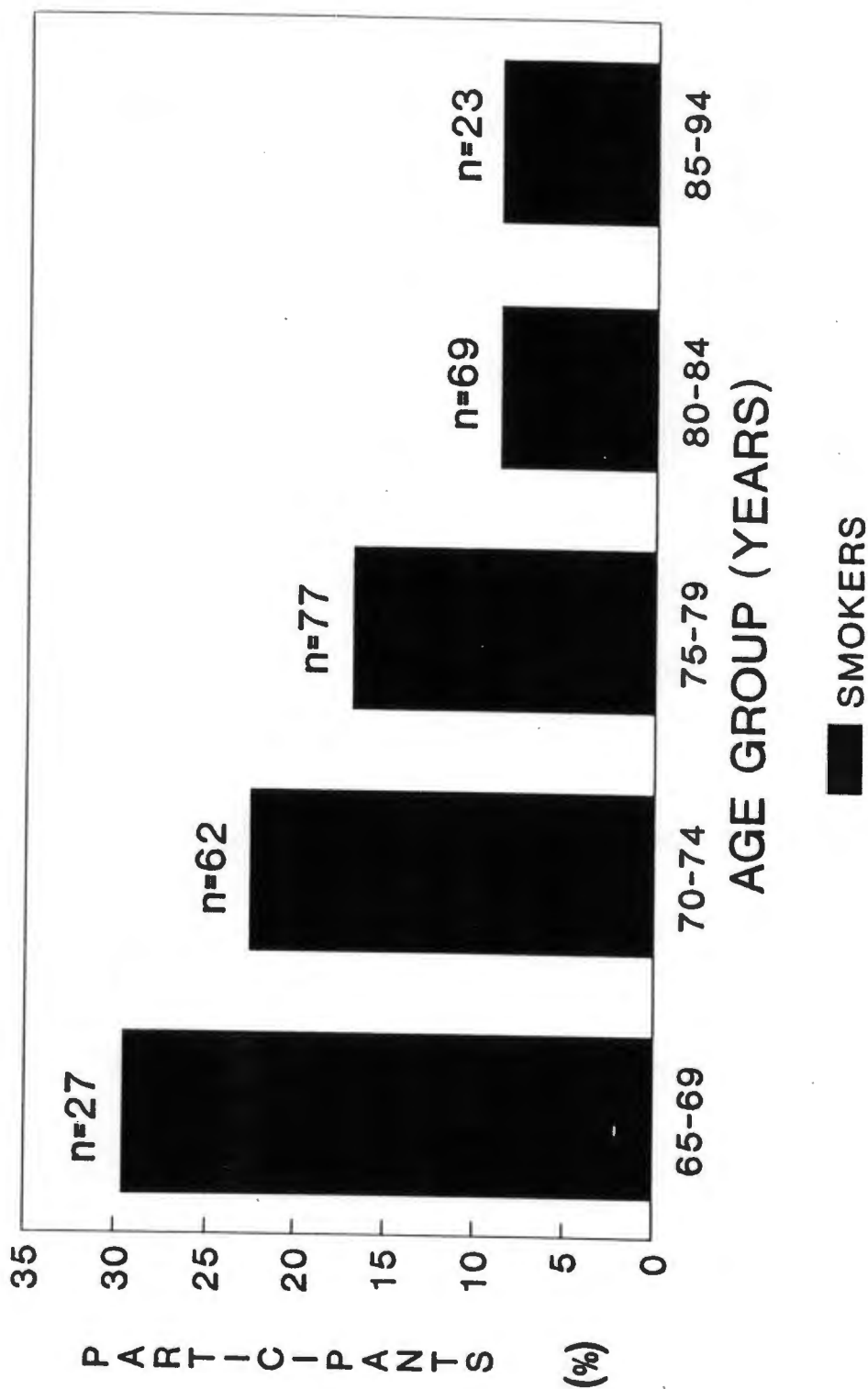
THE INCREASE IN BEREAVEMENT WITH ADVANCING AGE

Fig. 3.1.2.



SMOKING HABITS

Fig. 3.1.3



3.1.2 SEX

Approximately one fifth of the participants was male. This number is less than the proportion of men in the residences where up to one third of the residents was male. Random selection of the participants did not alter this ratio, but there was a high refusal rate amongst the men asked to participate in the study.

3.1.3 MARITAL STATUS AND CO-HABITANTS

Tables 3.1.2. and 3.1.3.

Of all participants 87.3% were single at the time of the interview. Of these, the majority were living on their own. Only 4 single participants were living with another person - one was living with her divorced husband, two were living with their sisters and one was living with a friend. As may be expected, the incidence of bereavement increased with increasing age (Figure 3.1.2). Of the single participants, 74.1% were widows or widowers, 9.5% were divorced, and 16.4% had never married. Approximately two thirds of all women were widows whilst only one quarter of males were widowers.

3.1.4 SMOKING HABITS

Table 3.1.4.

Eighty-four percent of participants were non-smokers and of those who smoked 67.5% smoked less than 20 cigarettes per day. Of note is the decline in the percentage of smokers with increasing age (Figure 3.1.3.). As the numbers of participants in the 85-89 and 90-94 year age groups are very small, the groups have been combined and are illustrated in Figure 3.1.3 as a single group of 85-94 years.

PATIENT CHARACTERISTICS

Table 3.1.4 : Relationship between smoking habits and gender/age (years)

GROUP	PERCENT FOR GENDER AND AGE GROUP (Years)								
	ALL	MALE	FEMALE	65-69	70-74	75-79	80-84	85-94	
TOTAL (n)	258	48	210	27	62	77	69	23	
Non-smoker	83.8	77.1	84.7	70.4	77.4	83.1	91.3	91.3	
Smoker	16.2	22.9	15.3	29.6	22.6	16.9	8.7	8.7	
Smoker (n)	43	11	32	8	14	13	6	2	
1 - 19 /day	67.5	63.6	68.8	50	64.3	61.5	100	100	
20 -29 /day	20.9	36.4	15.6	12.5	28.6	30.8	0	0	
> 30 /day	11.6	0	15.6	37.5	7.1	7.7	0	0	

Table 3.1.5 : Relationship between drinking habits and gender/age (years)

GROUP	PERCENT FOR GENDER AND AGE GROUP (Years)									
	ALL	MALE	FEMALE	65-69	70-74	75-79	80-84	85-89	90-94	
TOTAL (n)	259	49	210	27	62	79	68	21	2	
Teetotallers	23.9	18.4	25.2	22.2	22.6	29.1	26.5	4.8	0	
Drinkers	76.1	81.6	74.8	77.8	77.4	70.9	73.5	95.2	100	
Drinkers (n)	197	40	157	21	48	56	50	20	2	
6 - 7 days/week	37.1	62.5	30.6	38.1	37.5	33.9	34	55	0	
4 - 5 days/week	1.5	2.5	1.3	4.8	0	0	4	0	0	
2 - 3 days/week	9.1	2.5	10.8	14.3	10.4	14.3	4	0	0	
Once weekly	8.6	10	8.3	4.8	6.3	8.9	10	15	0	
< once monthly	43.7	22.5	49	38.1	45.8	42.9	48	30	100	

PATIENT CHARACTERISTICS

Table 3.1.6: Relationship between level of education and gender/age (years)

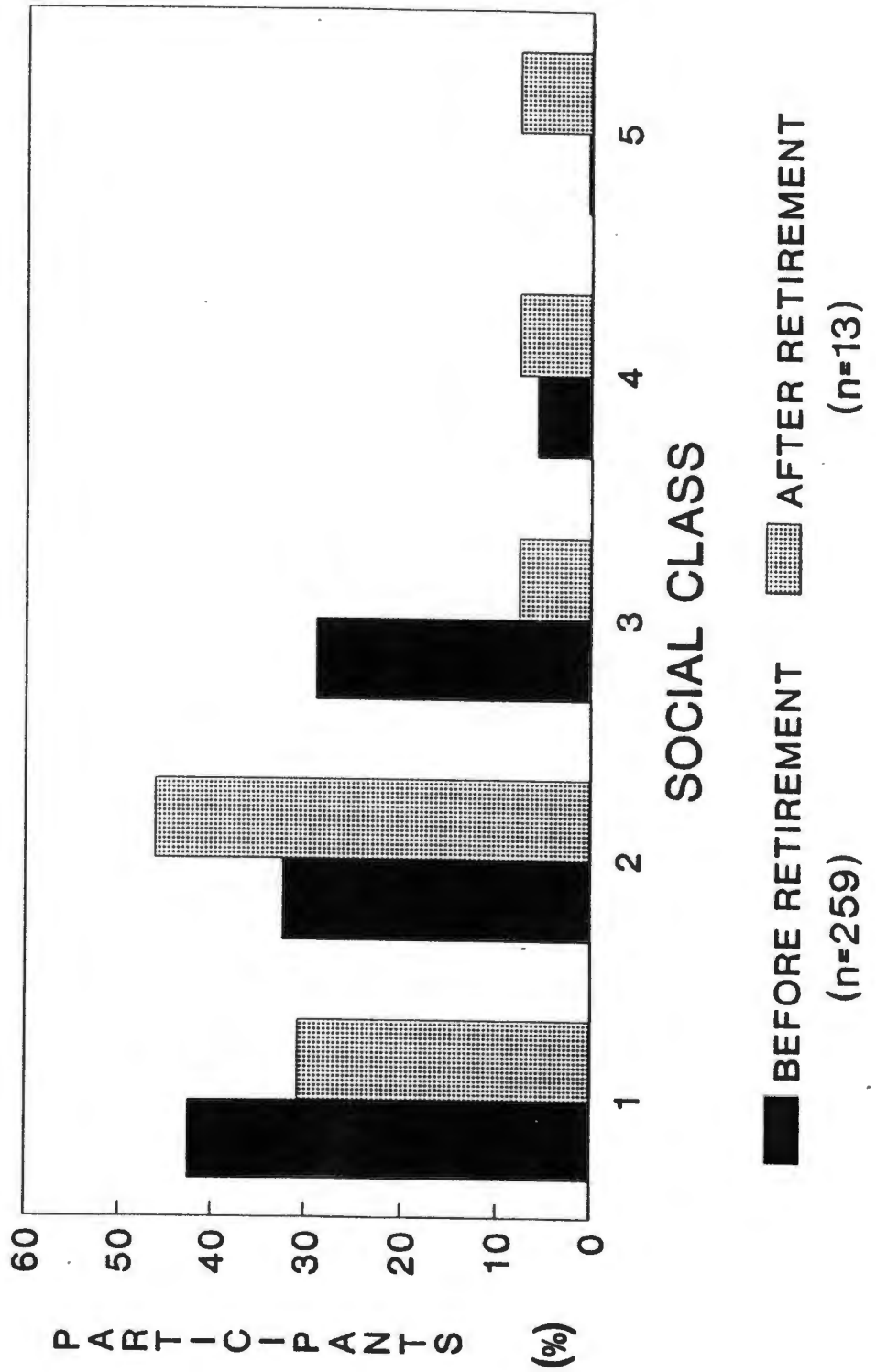
GROUP	PERCENT FOR GENDER AND AGE GROUP (Years)								
	ALL	MALE	FEMALE	65-69	70-74	75-79	80-84	85-89	90-94
TOTAL (n)	260	49	211	27	62	79	69	21	2
Std 2, 3, 4	0.4	0	0.5	0	1.6	0	0	0	0
Std 5, 6, 7	18.8	22.4	18	22.2	19.4	20.3	11.6	33.4	0
Std 8, 9, 10	60.8	51.2	61.1	70.4	67.7	51.9	66.7	47.6	0
Tertiary	20	18.4	20.4	7.4	11.3	27.8	21.7	19	100

Table 3.1.7. : Social class before and after retirement

CLASS	PERCENT	
	BEFORE	AFTER
(n)	259	13
1	42.5	30.8
2	32.4	46.1
3	28.9	7.7
4	5.8	7.7
5	0.4	7.7

SOCIAL CLASS BEFORE AND AFTER RETIREMENT

Fig. 3.1.1.4.



3.1.5 DRINKING HABITS

Table 3.1.5.

Three quarters of female participants and 81.6% of males consumed alcohol. Males drank more often with 62.5% embibing 6 to 7 days per week compared with 30.6% of females. Forty-nine percent of females only drank once monthly or on special occassions.

The proportion of drinkers versus non-drinkers does not vary greatly with age although the percentage was higher in the small sample of over 85 year olds, where more than 95% were drinkers and over half embibed 6 to 7 days per week.

3.1.6 LEVEL OF EDUCATION

Table 3.1.6.

Sixty-one percent of participants had passed Standards 8, 9 or 10 and a further 20% had received a tertiary education. All had attended school at least up to Standard 4. Only one participant had stopped her formal education at this level, while the rest had completed at least Standard 5 before leaving school. A high percent of female participants reached Standard 10. Once again, this may be a reflection of bias introduced in the selection of the study sample. The manner of selection of participants may have favoured the inclusion of a higher percent of well-educated individuals.

3.1.7 RETIREMENT AND SOCIAL CATEGORY

Table 3.1.7.

The social class distribution before and after retirement is shown in Figure 3.1.4.. Only 5% of the participants interviewed were still in some kind of gainful employment. Of this small number still working, 77% fell within the Cass Social categories

PATIENT CHARACTERISTICS

Table 3.1.8. : Relationship between monthly income/state pensioners and gender/age (years)

INCOME (per month)	PERCENT FOR GENDER AND AGE GROUP (Years)								
	ALL	MALE	FEMALE	65-69	70-74	75-79	80-84	85-89	90-94
TOTAL (n)	203	40	163	22	52	62	53	13	1
> R3000	5.9	20	2.5	9.1	5.8	4.8	7.5	0	0
R2500 - R2999	0	0	0	0	0	0	0	0	0
R2000 - R2499	1.5	5	0.6	0	0	3.2	1.9	0	0
R1200 - R1999	5.4	7.5	4.9	0	1.9	8.1	5.7	15.4	0
R1000 - R1199	13.3	12.5	13.5	0	5.8	11.3	24.5	30.7	0
R600 - R999	23.6	20	24.5	22.7	23.1	30.6	18.9	15.4	0
R500 - R599	16.3	17.5	16	27.3	19.2	9.7	19	15.4	0
< R499	34	17.5	38	40.9	44.2	32.3	24.5	23.1	100
TOTAL (n)	257	49	208	27	62	79	67	20	2
State Pensioner	31.9	22.4	34.1	40.8	41.9	26.6	26.9	30	0

Table 3.1.9. : Incidence of health service attendance according to gender and age

HEALTH CARE TYPE	PERCENT FOR GENDER AND AGE GROUP (Years)								
	ALL	MALE	FEMALE	65-69	70-74	75-79	80-84	85-89	90-94
TOTAL Per Group (n)	259	48	209	27	62	79	67	20	2
PRIVATE : GP=yes	73.4	83.3	70.8	66.7	64.5	77.2	76.1	80	100
: GP=no	26.6	16.7	29.2	33.3	35.5	22.8	23.9	20	0
TOTAL Per Group (n)	259	48	211	27	62	79	69	20	2
STATE : CLINIC=yes	38.2	25	41.2	40.8	40.3	43	29	45	0
: CLINIC=no	61.8	75	58.8	59.2	59.7	57	71	65	100

1 and 2. This can be expected as 74.9% of the participants were placed in these 2 categories before retirement.

The separate frequencies for sex and age are not considered here as the social standing of the women is dependent on that of the husbands, and assessment of social standing is dependent on the present or last position of employment which does not alter when the person is retired.

3.1.8 MONTHLY INCOME

Table 3.1.8.

Since the majority of the participants interviewed were grouped into the Cass Prestige categories of 1 and 2, it might be expected that they would be receiving incomes that would be at least likely to place them in the category one below that which they were in at the time of retirement ie. between R2500 to R1200 per month. Of the 203 participants who answered this question, 73,9% were receiving a monthly income of less than R999. Thirty-four percent were earning less than R499 per month which, at the time that this study was undertaken, was the level at which a white pensioner could apply for a social welfare pension. It is therefore not surprising that of the 257 who answered, 31.9% were already receiving a state social pension.

3.1.9 TYPE OF HEALTH SERVICE

Table 3.1.9. and 3.1.10.

Seventy three comma four percent of the participants have a General Practitioner whom they consult for their health care problems. Of these 21.7% had last visited their doctor more than 6 months ago and only 38.6% had seen him within the last month.

PATIENT CHARACTERISTICS

Table 3.1.10. : Visits to health care service

HEALTH CARE		PERCENT FOR GENDER AND AGE GROUP (Years)								
TYPE	ALL	MALE	FEMALE	65-69	70-74	75-79	80-84	85-89	90-94	
TOTAL Per Group (n)	189	40	149	18	40	61	52	16	2	
PRIVATE : VISIT- <1 month	38.6	47.5	36.2	38.9	25	47.5	36.5	43.7	50	
: VISIT- 2-6 months	39.7	40	39.6	61.1	45	39.4	36.5	18.8	0	
: VISIT- >6 months	21.7	12.5	24.2	0	30	13.1	27	37.5	50	
TOTAL Per Group (n)	99	12	87	11	25	34	20	9	0	
STATE : VISIT- <1 month	69.7	75	69	45.5	72	73.5	75	66.7	0	
: VISIT- 2-6 months	21.2	25	20.7	45.5	16	23.5	10	22.2	0	
: VISIT- >6 months	9.1	0	10.3	9	12	3	15	11.1	0	

Table 3.1.11. : Medicine suppliers.

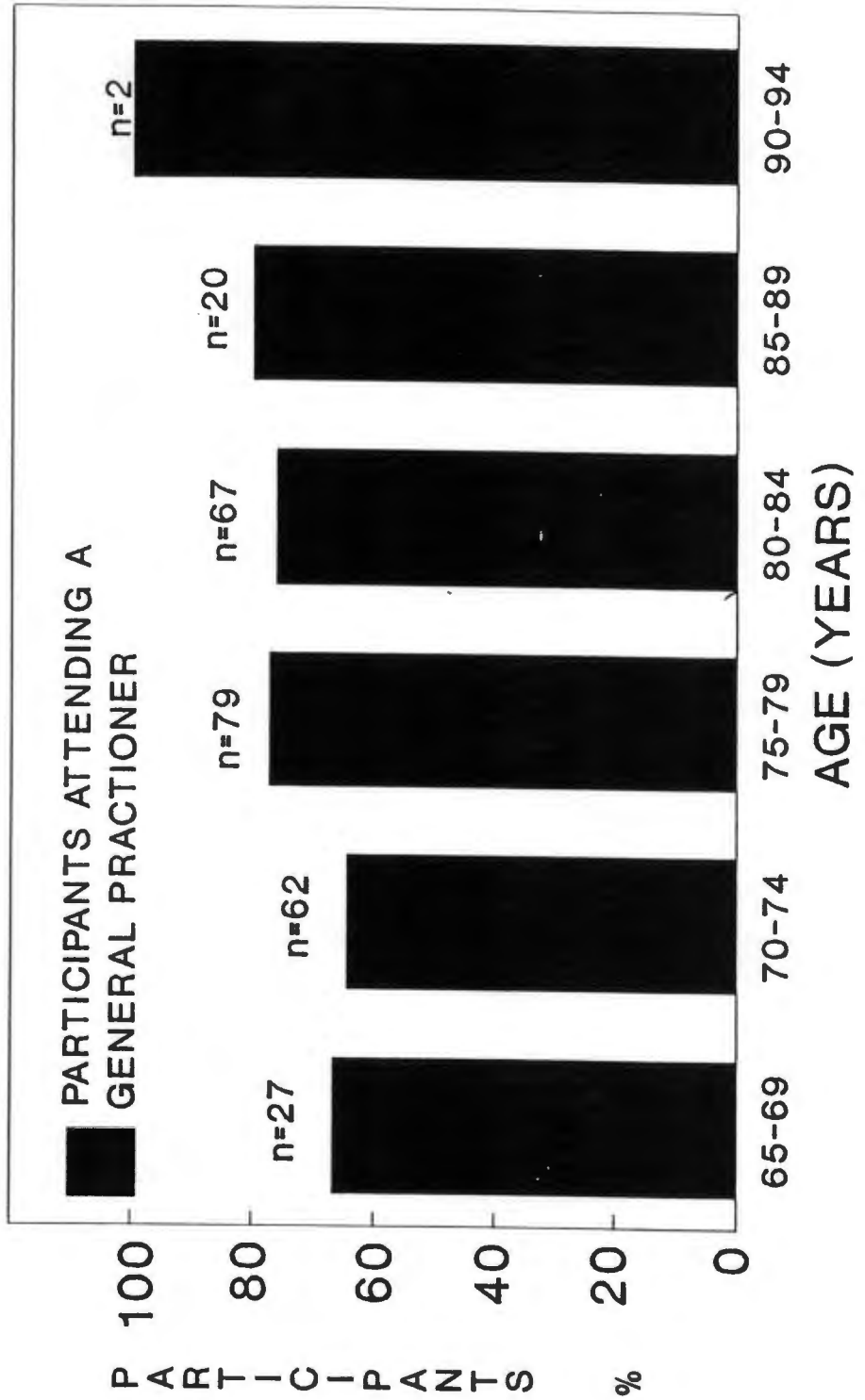
		PERCENT FOR GENDER AND AGE GROUP (Years)								
TYPE	ALL	MALE	FEMALE	65-69	70-74	75-79	80-84	85-89	90-94	
TOTAL Per Group (n)	259	48	211	27	62	78	69	21	2	
MEDICINE: Pharmacy	64.9	79.2	61.6	59.3	56.4	65.4	72.5	66.7	100	
SUPPLIER: Doctor	4.6	8.3	3.8	3.7	8.1	5.1	2.9	0	0	
: Clinic	25.1	12.5	28	33.3	24.2	24.4	21.7	33.3	0	
: Elsewhere	5.4	0	6.6	3.7	11.3	5.1	2.9	0	0	

Table 3.1.12. : Relationship between participants receiving medical aid and gender/age (years)

		PERCENT FOR GENDER AND AGE GROUP (Years)								
TYPE	ALL	MALE	FEMALE	65-69	70-74	75-79	80-84	85-89	90-94	
TOTAL Per Group (n)	260	49	211	27	62	79	69	21	2	
MEDICAL : Yes	51.2	59.2	49.3	63	43.2	54.3	49.3	47.3	50	
AID : No	48.8	40.8	50.7	37	54.8	45.7	50.7	52.4	50	

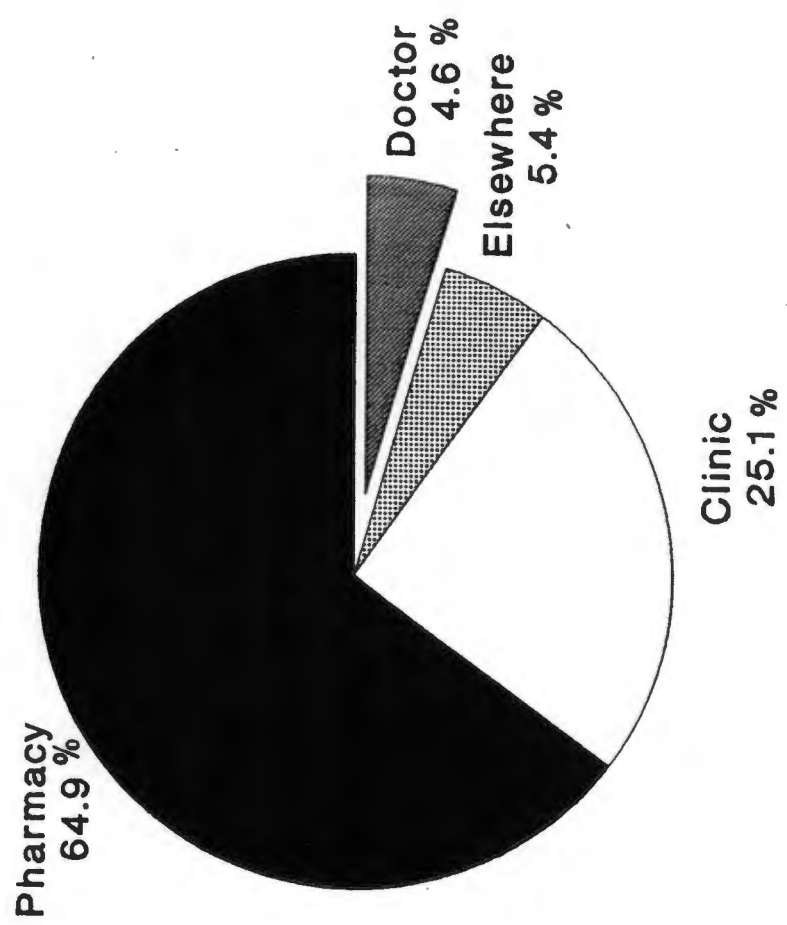
RELATIONSHIP BETWEEN GENERAL PRACTITIONER ATTENDANCE AND AGE

Fig. 3.1.5.



MEDICINE SUPPLIER

Fig. 3.1.1.6.



Thirty-eight comma two percent of the participants use the services of a state-run health care centre or clinic and only 9.1% had not visited the clinic within the last 6 months. The majority - 69,7% - had visited the clinic within the last month, compared with only 38.6% who had visited their private practitioner in this period. This discrepancy may be a reflection of the necessity to collect repeat medicines on a monthly basis from state clinics or may indicate more regular follow up by clinics than private practitioners.

A higher percentage of women (41.2%) as against men (25%) use the state clinics but more men attend general practitioners and appear to be more conscientious about visiting their doctors. Forty seven point five percent and 75% of males compared with 36.2% and 69% of females attended their private practitioner or clinic respectively in the previous month. As shown in Figure 3.1.5 visits to private practitioners appear to increase with advancing age. This trend was not apparent, however, with clinic attenders. There is some overlap of the 2 groups with some participants attending the state health care clinics as well as consulting their own private general practitioner.

3.1.10 SOURCE OF MEDICINE SUPPLY

Table 3.1.11.

As shown in Figure 3.1.6. only 25.1% of the participants received their medicines directly from the state clinic. The majority - 64.9% - obtained their medicines at a retail pharmacy with only 4.6% receiving their medicines directly from their doctor and 5.4% purchasing them elsewhere.

3.1.11 MEDICAL AID

Table 3.1.12.

It is interesting to note that while 25.1% of the participants receive their medicine from the state, only 51.2% of the total number of participants are members of a medical aid. It can be assumed that one quarter of the participants receive no financial assistance for their health care and the purchase of medicines.

A higher percent of males than females receive medical aid - 59.2% as against 49.3%.

3.1.12 COGNITIVE FUNCTION AND SHORT TERM MEMORY

Cognitive function was assessed in 238 participants and was considered normal in 235. Three candidates were excluded from the study because of poor cognitive function. As a result of insufficient time for completion of the interview, cognitive function scores were not obtained for a further 25 participants. These participants were included in the study group, as the interviewer felt that they showed no signs of significantly diminished mental ability.

3.1.13 PATIENT SATISFACTION WITH INFORMATION ON MEDICINES

The majority of participants were satisfied that they were receiving enough information from their health care providers to allow them to use their medicines safely. Only 12.5% of the 257 participants asked were dissatisfied.

3.2 DRUG USE PATTERNS

The information presented in this section was compiled out of data from the interview schedule. Relationships between per-capita use of medicines, the incidence of dosage regimen changes by the participants and the participants characteristics were examined.

3.2.1 MEDICINES USED.

Tables 3.2.1 to 3.2.4.

A total of 843 medicines was used by the study population. Of these 544 were prescribed and 149 self-prescribed medicines used within the preceeding two weeks. The remaining 150 medicines were additional medicines that were used on an infrequent basis by the participant, and which had not been used within the previous 2 weeks.

Tables 3.2.1. to 3.2.4. show the incidence of use of all medicines, prescribed, self-prescribed and additional medicines respectively. The medicines are listed according to the pharmacological classification as indicated on the product package insert. There is some overlap between the tables as some of the medicines which may normally have been self-prescribed may have been prescribed by a doctor, and not all prescribed medicines were used on a continual basis and may have fallen into the additional medicines group.

Non-narcotic analgesics are the most frequently used of all medicines, and self-prescribed medicines. They are the second most frequently prescribed medicines after diuretics and are second

DRUG USE PATTERNS

Table 3.2.1 : All medicines used listed according to frequency of use

CLASSIFIC. NUMBER	DRUG CLASSIFICATION	INSTANCES OF USE	PERCENT OF TOTAL
02 08 00	Non-narcotic analgesics, antipyretics	89	10.56
18 01 00	Diuretics	86	10.20
11 05 00	Laxatives	49	5.81
03 01 00	Antirheumatics (anti-inflammatory agents)	41	4.86
02 06 00	Tranquillisers	40	4.74
07 01 04	Vasodilators -coronary (angina pectoris)	35	4.15
34 00 00	Other (homeopathic, herbal, etc)	33	3.91
07 01 03	Other hypotensives	30	3.56
22 01 00	Multivitamins and multivitamins with minerals	29	3.44
11 04 01	Acid neutralisers	28	3.32
02 02 00	Sedatives, hypnotics	27	3.20
22 01 04	Other vitamins	26	3.08
05 02 00	Adrenolytics (sympathicolitics)	26	3.08
06 03 00	Cardiac glycosides	24	2.85
07 01 00	Vasodilators, hypotensive medicines	23	2.73
24 00 00	Mineral substitutes, electrolytes	22	2.61
07 01 02	Rauwolfia:diuretic combinations	20	2.37
01 02 00	Psychoanaleptics (antidepressants)	16	1.90
02 06 01	Phenothiazines and derivatives	13	1.54
21 03 00	Thyroid preparatons	11	1.30
21 02 00	Oral hypoglycaemics	9	1.07
10 01 00	Antitussives and expectorants	9	1.07
05 08 00	Preps. for common cold, nasal decongestants, antihistaminics	9	1.07
05 07 01	Antihistaminics	8	0.95
33 00 00	Tonics	7	0.83
02 09 00	Special analgesic combinations	7	0.83
11 04 00	Antacids	5	0.59
10 02 02	Medicines acting on respiratory system: other	5	0.59
10 02 01	Inhalants	5	0.59
10 02 00	Bronchodilators	5	0.59
02 06 05	Central nervous system depressants: miscellaneous structures	5	0.59
20 01 01	Broad and medium spectrum antibiotics	4	0.47
18 05 00	Urinary tract antiseptics	4	0.47
18 03 00	Genito-urinary system: ion-exchange preparations	4	0.47
13 04 01	Corticosteroids with or without anti-infective agents	4	0.47
11 02 00	Gastro-intestinal antispasmodics and anti-cholinergics	4	0.47
08 03 00	Erythropoietics (haematinics)	4	0.47
08 02 00	Anticoagulants	4	0.47
07 05 00	Serum cholesterol reducers	4	0.47

Table 3.2.1/ Continued:

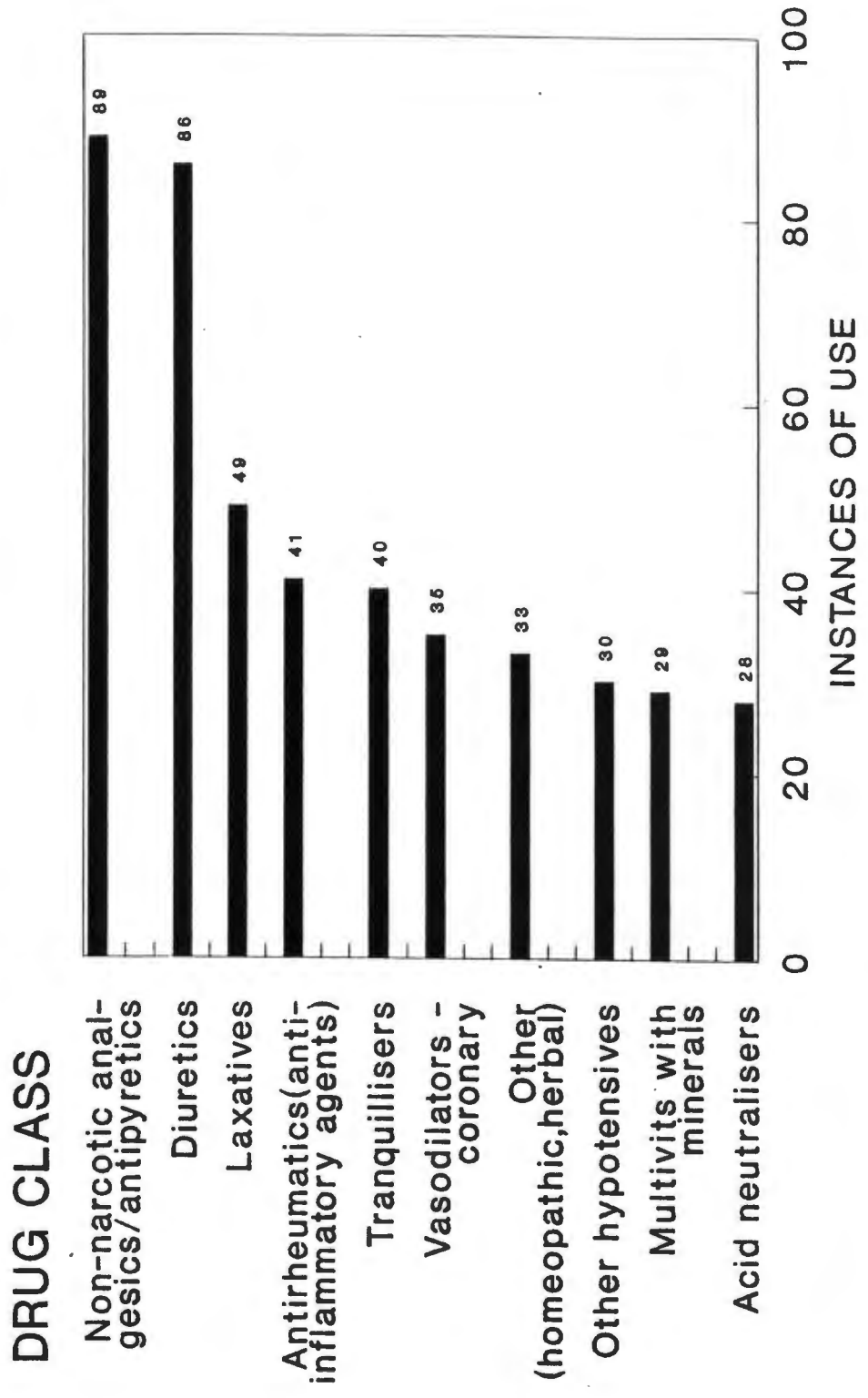
DRUG USE PATTERNS

Table 3.2.1 (Contd.) : All medicines used listed according to frequency of use

CLASSIFIC. NUMBER	DRUG CLASSIFICATION	INSTANCES OF USE	PERCENT OF TOTAL
22 01 02	Vitamins for prenatal use	3	0.36
21 08 01	Oestrogens	3	0.36
21 05 01	Corticosteroids and analogues	3	0.36
15 04 00	Ophthalmic preparations: other	3	0.36
11 06 00	Lubricants and faecal softeners	3	0.36
11 04 03	Antacids: other	3	0.36
06 02 00	Cardiac depressants	3	0.36
03 03 00	Antigout preparations	3	0.36
02 03 00	Barbiturates	3	0.36
20 01 07	Antifungal antibiotics	2	0.24
17 01 00	Peripherally acting muscle relaxants	2	0.24
16 01 00	Nasal decongestants	2	0.24
14 01 00	Wound disinfectants	2	0.24
13 06 00	Rubefacients	2	0.24
11 04 02	Antacids: acid neutralisers with antispasmodics	2	0.24
08 01 00	Coagulants, haemostatics	2	0.24
07 03 00	Migraine preparations	2	0.24
07 01 01	Rauwolfia and combinations	2	0.24
05 07 02	Anti-emetics and anti-vertigo preparations	2	0.24
31 00 00	Enzymatic preparations	1	0.12
30 01 00	Biologicals: antigens	1	0.12
22 01 05	Vitamins: B-complex with vitamin C	1	0.12
22 01 01	Vitamins for paediatric use	1	0.12
21 07 00	Male sex hormones	1	0.12
20 02 00	Antimicrobials (chemotherapeutics): other than antibiotics	1	0.12
20 01 02	Penicillins	1	0.12
20 01 00	Antibiotics and antibiotic combinations	1	0.12
16 04 00	Naso- and bucco-pharyngeal antiseptics	1	0.12
16 03 00	ENT surface anaesthetics	1	0.12
16 00 00	Ear, nose and throat preparations	1	0.12
15 03 00	Combin. antibiotics and/or sulphonamides and corticosteroids	1	0.12
11 10 00	Meds. acting on gastro-intestinal tract: special combin.	1	0.12
11 09 00	Antidiarrhoeals	1	0.12
07 01 05	Vasodilators - peripheral	1	0.12
05 04 02	Medicines affecting autonomic functions: general	1	0.12
05 04 01	Anti-parkinsonism preparations	1	0.12
05 01 00	Adrenomimetics (sympathomimetics)	1	0.12
05 00 00	Medicines affecting autonomic functions	1	0.12
02 06 03	Diphenylmethane and its derivatives	1	0.12
02 06 02	Rauwolfia alkaloids and combinations	1	0.12
01 03 00	Special antidepressant combinations	1	0.12

THE TEN MOST COMMONLY USED CLASSES OF ALL MEDICINES

Fig. 3.2.1.



DRUG USE PATTERNS

Table 3.2.2 : Prescribed medicines used listed according to frequency of use

CLASSIFIC. NUMBER	DRUG CLASSIFICATION	INSTANCES OF USE	PERCENT OF TOTAL
18 01 00	Diuretics	84	15.44
02 08 00	Non-narcotic analgesics, antipyretics	43	7.90
02 06 00	Tranquillisers	36	6.62
07 01 04	Vasodilators -coronary (angina pectoris)	33	6.07
03 01 00	Antirheumatics (anti-inflammatory agents)	33	6.07
07 01 03	Other hypotensives	30	5.51
05 02 00	Adrenolytics (sympathicolitics)	26	4.78
06 03 00	Cardiac glycosides	24	4.41
02 02 00	Sedatives, hypnotics	24	4.41
07 01 00	Vasodilators, hypotensive medicines	23	4.23
24 00 00	Mineral substitutes, electrolytes	19	3.49
07 01 02	Rauwolfia:diuretic combinations	19	3.49
01 02 00	Psychoanaleptics (antidepressants)	15	2.76
21 03 00	Thyroid preparatons	11	2.02
02 06 01	Phenothiazines and derivatives	11	2.02
22 01 00	Multivitamins and multivitamins with minerals	9	1.65
21 02 00	Oral hypoglycaemics	9	1.65
11 05 00	Laxatives	7	1.29
05 07 01	Antihistaminics	7	1.29
22 01 04	Other vitamins	5	0.92
02 06 05	Central nervous system depressants: miscellaneous structures	5	0.92
20 01 01	Broad and medium spectrum antibiotics	4	0.74
18 05 00	Urinary tract antiseptics	4	0.74
08 03 00	Erythropeotics (haematinics)	4	0.74
07 05 00	Serum cholesterol reducers	4	0.74
21 08 01	Oestrogens	3	0.55
11 04 03	Antacids: other	3	0.55
10 02 02	Medicines acting on respiratory system: other	3	0.55
10 02 00	Bronchodilators	3	0.55
06 02 00	Cardiac depressants	3	0.55
02 03 00	Barbiturates	3	0.55
20 01 07	Antifungal antibiotics	2	0.37
11 04 00	Antacids	2	0.37
11 02 00	Gastro-intestinal antispasmodics and anti-cholinergics	2	0.37
08 02 00	Anticoagulants	2	0.37
08 01 00	Coagulants, haemostatics	2	0.37
07 01 01	Rauwolfia and combinations	2	0.37
05 08 00	Preps. for common cold, nasal decongestants, antihistaminics	2	0.37
05 07 02	Anti-emetics and anti-vertigo preparations	2	0.37
03 03 00	Antigout preparations	2	0.37
02 09 00	Special analgesic combinations	2	0.37

Table 3.2.2/Continued:

DRUG USE PATTERNS

Table 3.2.2(Contd.) : Prescribed medicines used listed according to frequency of use

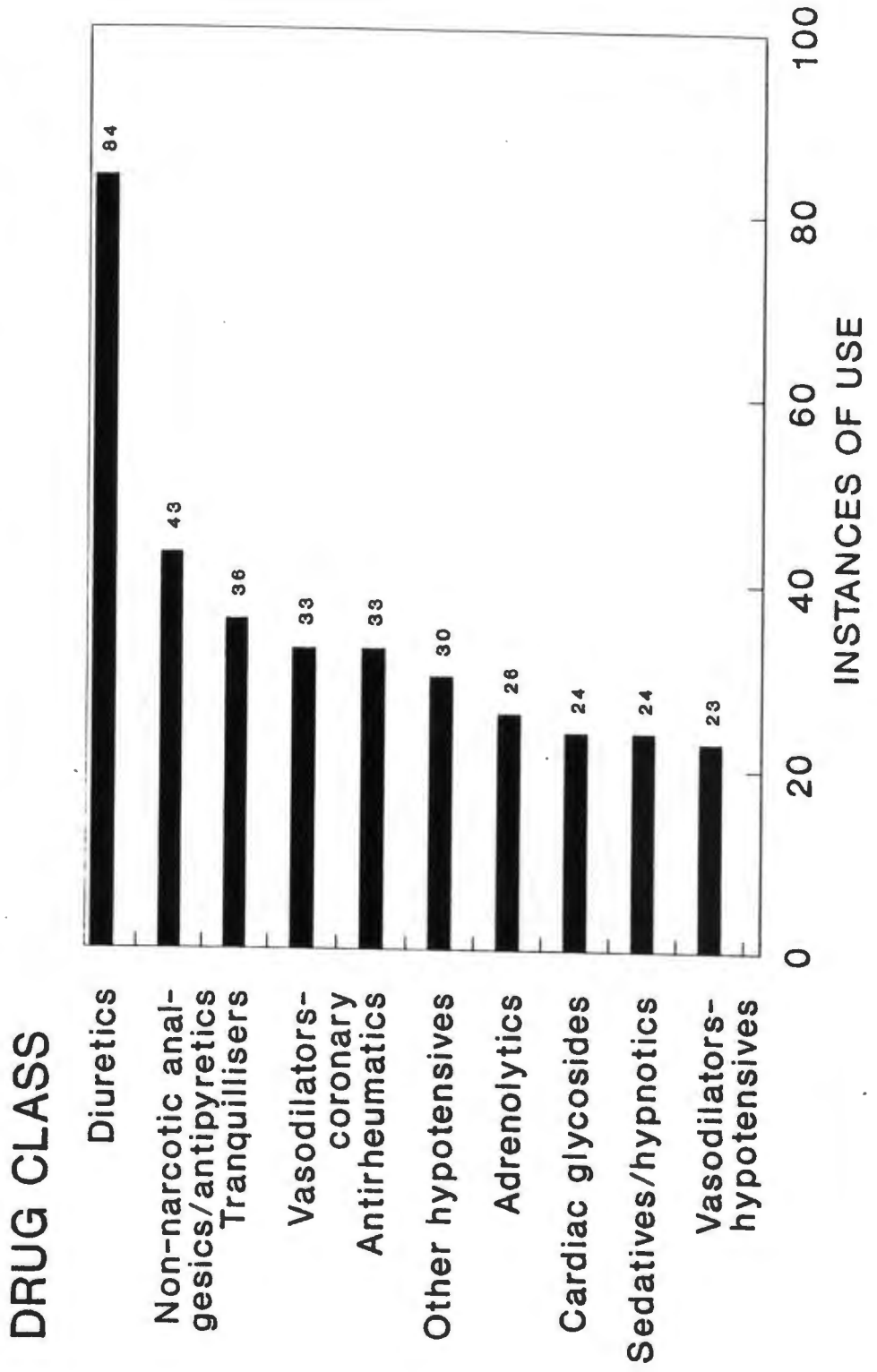
CLASSIFIC. NUMBER	DRUG CLASSIFICATION	INSTANCES OF USE	PERCENT OF TOTAL
22 01 05	Vitamins: B-complex with vitamin C	1	0.18
22 01 02	Vitamins for prenatal use	1	0.18
21 07 00	Male sex hormones	1	0.18
20 02 00	Antimicrobials (chemotherapeutics): other than antibiotics	1	0.18
20 01 02	Penicillins	1	0.18
20 01 00	Antibiotics and antibiotic combinations	1	0.18
17 01 00	Peripherally acting muscle relaxants	1	0.18
16 03 00	ENT surface anaesthetics	1	0.18
11 04 01	Acid neutralisers	1	0.18
10 01 00	Antitussives and expectorants	1	0.18
07 03 00	Migraine preparations	1	0.18
07 01 05	Vasodilators - peripheral	1	0.18
05 04 02	Medicines affecting autonomic functions: general	1	0.18
05 04 01	Anti-parkinsonism preparations	1	0.18
05 01 00	Adrenomimetics (sympathomimetics)	1	0.18
02 06 02	Rauwolfia alkaloids and combinations	1	0.18
01 03 00	Special antidepressant combinations	1	0.18

Table 3.2.3 : Self-prescribed medicines used listed according to frequency of use

CLASSIFIC. NUMBER	DRUG CLASSIFICATION	INSTANCES OF USE	PERCENT OF TOTAL
02 08 00	Non-narcotic analgesics, antipyretics	32	21.48
34 00 00	Other (homeopathic, herbal, etc)	21	14.09
22 01 04	Other vitamins	20	13.42
22 01 00	Multivitamins and multivitamins with minerals	20	13.42
11 05 00	Laxatives	16	10.74
11 04 01	Acid neutralisers	14	9.40
05 08 00	Preps. for common cold, nasal decongestants, antihistaminics	5	3.36
02 09 00	Special analgesic combinations	5	3.36
11 04 00	Antacids	3	2.01
02 02 00	Sedatives, hypnotics	3	2.01
24 00 00	Mineral substitutes, electrolytes	2	1.34
22 01 02	Vitamins for prenatal use	2	1.34
30 01 00	Biologicals: antigens	1	0.67
17 01 00	Peripherally acting muscle relaxants	1	0.67
16 04 00	Naso- and bucco-pharyngeal antiseptics	1	0.67
10 01 00	Antitussives and expectorants	1	0.67
05 07 01	Antihistaminics	1	0.67
02 06 00	Tranquillisers	1	0.67

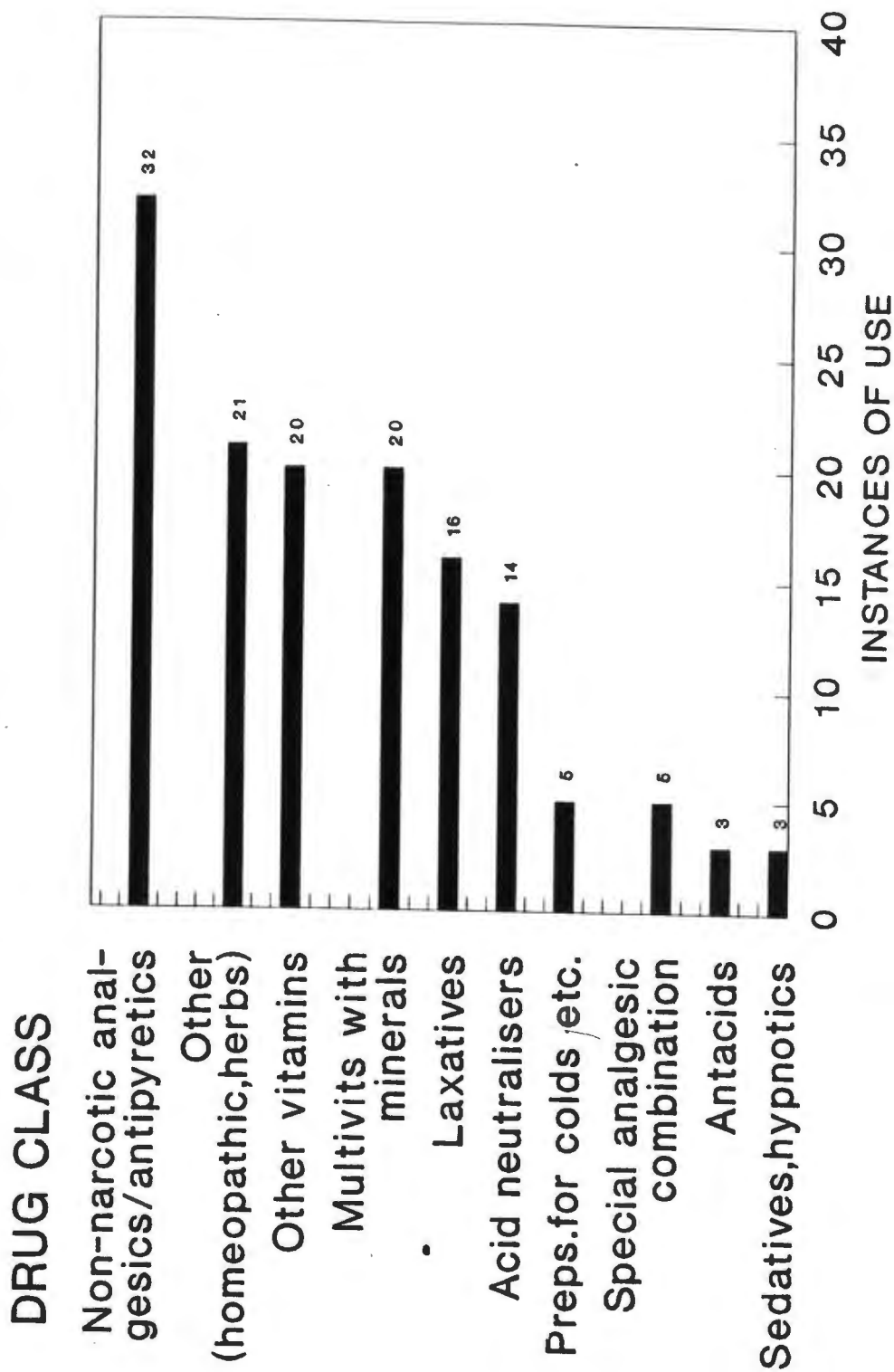
THE TEN MOST COMMONLY PRESCRIBED CLASSES OF MEDICINES

Fig. 3.2.2.



THE TEN MOST COMMONLY SELF- PRESCRIBED CLASSES OF MEDICINES

Fig. 3.2.3.



DRUG USE PATTERNS

Table 3.2.4 : Additional medicines used listed according to frequency of use

CLASSIFIC. NUMBER	DRUG CLASSIFICATION	INSTANCES OF USE	PERCENT OF TOTAL
11 05 00	Laxatives	26	17.33
02 08 00	Non-narcotic analgesics, antipyretics	14	9.33
11 04 01	Acid neutralisers	13	8.67
34 00 00	Other (homeopathic, herbal, etc)	12	8.00
03 01 00	Antirheumatics (anti-inflammatory agents)	8	5.33
33 00 00	Tonics	7	4.67
10 01 00	Antitussives and expectorants	7	4.67
10 02 01	Inhalants	5	3.33
18 03 00	Genito-urinary system: ion-exchange preparations	4	2.67
13 04 01	Corticosteroids with or without anti-infective agents	4	2.67
21 05 01	Corticosteroids and analogues	3	2.00
15 04 00	Ophthalmic preparations: other	3	2.00
11 06 00	Lubricants and faecal softeners	3	2.00
02 06 00	Tranquillisers	3	2.00
18 01 00	Diuretics	2	1.33
16 01 00	Nasal decongestants	2	1.33
14 01 00	Wound disinfectants	2	1.33
13 06 00	Rubefaciants	2	1.33
11 04 02	Antacids: acid neutralisers with antispasmodics	2	1.33
11 02 00	Gastro-intestinal antispasmodics and anti-cholinergics	2	1.33
10 02 02	Medicines acting on respiratory system: other	2	1.33
10 02 00	Bronchodilators	2	1.33
08 02 00	Anticoagulants	2	1.33
07 01 04	Vasodilators -coronary (angina pectoris)	2	1.33
05 08 00	Preps. for common cold, nasal decongestants, antihistaminics	2	1.33
02 06 01	Phenothiazines and derivatives	2	1.33
31 00 00	Enzymatic preparations	1	0.67
24 00 00	Mineral substitutes, electrolytes	1	0.67
22 01 04	Other vitamins	1	0.67
22 01 01	Vitamins for paediatric use	1	0.67
16 00 00	Ear, nose and throat preparations	1	0.67
15 03 00	Combin. antibiotics and/or sulphonamides and corticosteroids	1	0.67
11 10 00	Meds. acting on gastro-intestinal tract: special combin.	1	0.67
11 09 00	Antidiarrhoeals	1	0.67
07 03 00	Migraine preparations	1	0.67
07 01 02	Rauwolfia:diuretic combinations	1	0.67
05 00 00	Medicines affecting autonomic functions	1	0.67
03 03 00	Antigout preparations	1	0.67
02 06 03	Diphenylmethane and its derivatives	1	0.67
01 02 00	Psychoanaleptics (antidepressants)	1	0.67

after laxatives in the additional medicines group. Diuretics are the second and laxatives the third most commonly used of all medicines. Tranquillisers are the third most often prescribed medicine. Of note in the self-prescribed group is the fact that "Other" or hoemeopathic and herbal medicines are the second most often used with "Other vitamins" and "multivitamins and multi-vitamins with minerals" falling into joint third place. In the additional medicines group, acid neutralisers are third on the list. The instances of use of the ten most commonly used classes of drugs are shown in Figure 3.2.1.. Figures 3.2.2 and 3.2.2 show the ten most commonly used classes of prescribed and self-prescribed drugs respectively.

3.2.2 PER CAPITA USE OF MEDICINES

Tables 3.2.5. to 3.2.10.

A total of 260 participants showed 843 instances of drug use. Some of the participants claimed to use no medicines at all, whilst others were using up to 10 different medications.

From Table 3.2.5. 5.8% of all participants claimed no medicine use at all. A minority of 20.4 % were not taking any prescribed medicine but over half - 58.5% - were not taking any self-prescribed medicines. The highest number of prescribed medicines used by any participant was 7 with 2.3% of all participants receiving that number. The average per capita use of all medicines was 3.2, prescribed medicines 2.6 and 1.4 each for self-prescribed and additional medicines (Figure 3.2.4). The distribution of the per capita use of the different groups of medicines is graphically illustrated in Figures 3.2.5. and 3.2.6.

DRUG USE PATTERNS

Table 3.2.5 : Per capita use of each medicine type

MEDS. PER CAPITA	PERCENT PARTICIPANTS per TYPE			
	ALL	PRESCR	S-PRES	AD.MED
(n)	260	260	260	260
0	5.8	20.4	58.5	60
1	12.3	18.5	31.5	30.4
2	18.8	21.1	6.9	5
3	22.3	23.5	1.5	2.7
4	18.5	9.2	1.2	1.5
5	8.8	4.2	0.4	0
6	7.3	0.8	0	0
7	4.6	2.3	0	0
8	1.2	0	0	0.4
9	0	0	0	0
10	0.4	0	0	0

Table 3.2.6 : Average per capita use of medicines according to gender and age (years)

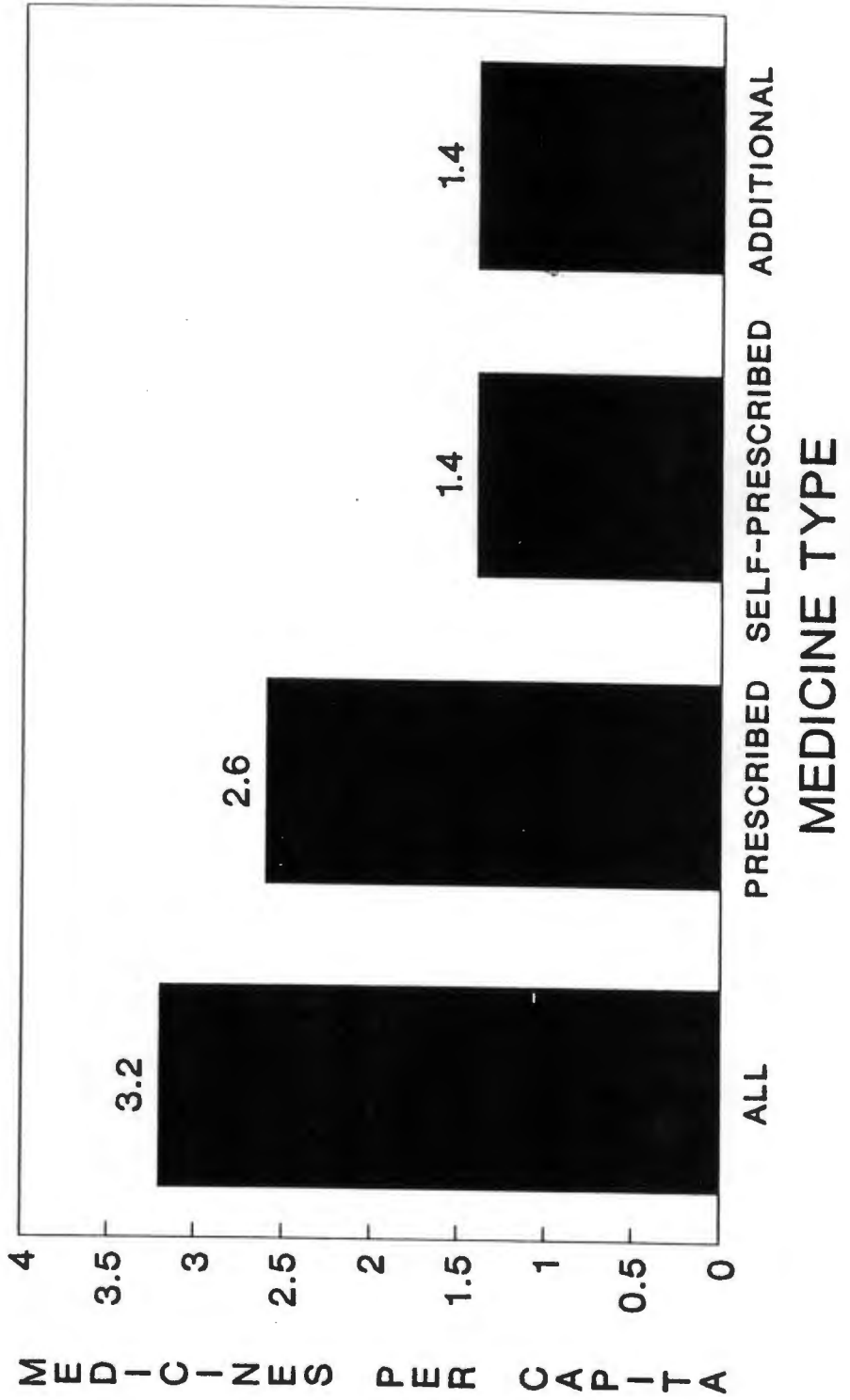
MED. TYPE	GENDER			AGE					
	ALL	MALE	FEMALE	65-69y	70-74y	75-79y	80-84y	85-89y	90-94y
ALL	3.2	2.9	3.3	3.4	3.4	3.1	3.1	3.3	3.5
PRESCR	2.6	2.4	2.7	2.4	2.9	2.7	2.5	2.4	4
S-PRES	1.4	1.1	1.4	1.8	1.6	1.3	1.2	1	1.5
A-MEDS	1.4	1.7	1.4	2.1	1.5	1.2	1.3	1.7	0

Table 3.2.7 : Average per capita use of all medicines according to health care type, medical aid and medicine supplier

MED. TYPE	HEALTH CARE		MEDICAL AID			SUPPLIER			
	CLINIC	GP	M.AID	NO AID	PH'CY	DOCTOR	CLINIC	OTHER	
ALL	3.7	3.1	3.2	3.3	3.3	2.8	3.6	2.1	
PRESCR	2.9	2.6	2.6	2.7	2.5	2.4	3	2	
S-PRES	1.2	1.4	1.4	1.3	1.4	1.1	1.1	1.9	
A-MEDS	1.6	1.3	1.3	1.5	1.4	1.5	1.5	1.5	

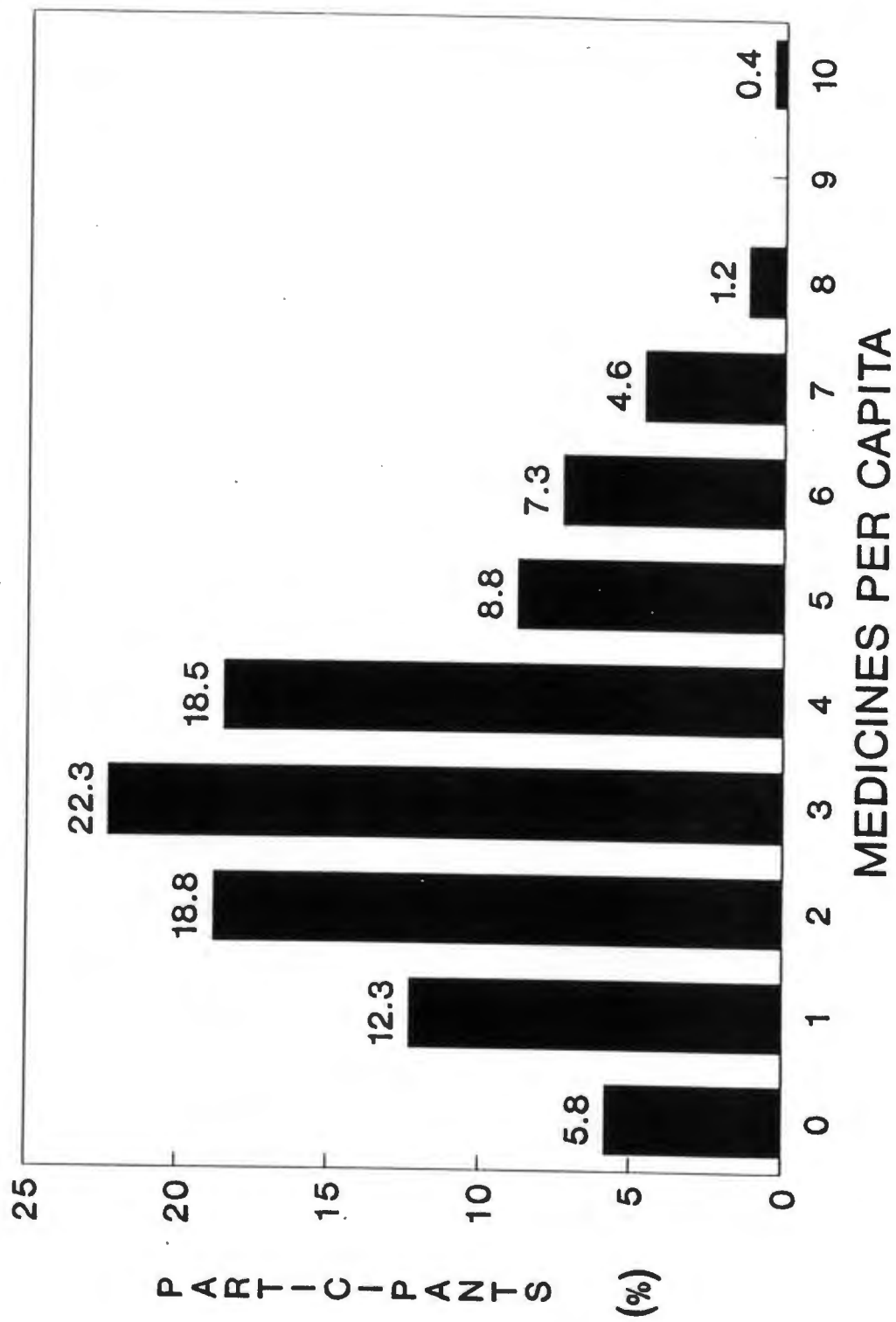
AVERAGE PER CAPITA USE ACCORDING TO MEDICINE TYPE

Fig. 3.2.4.



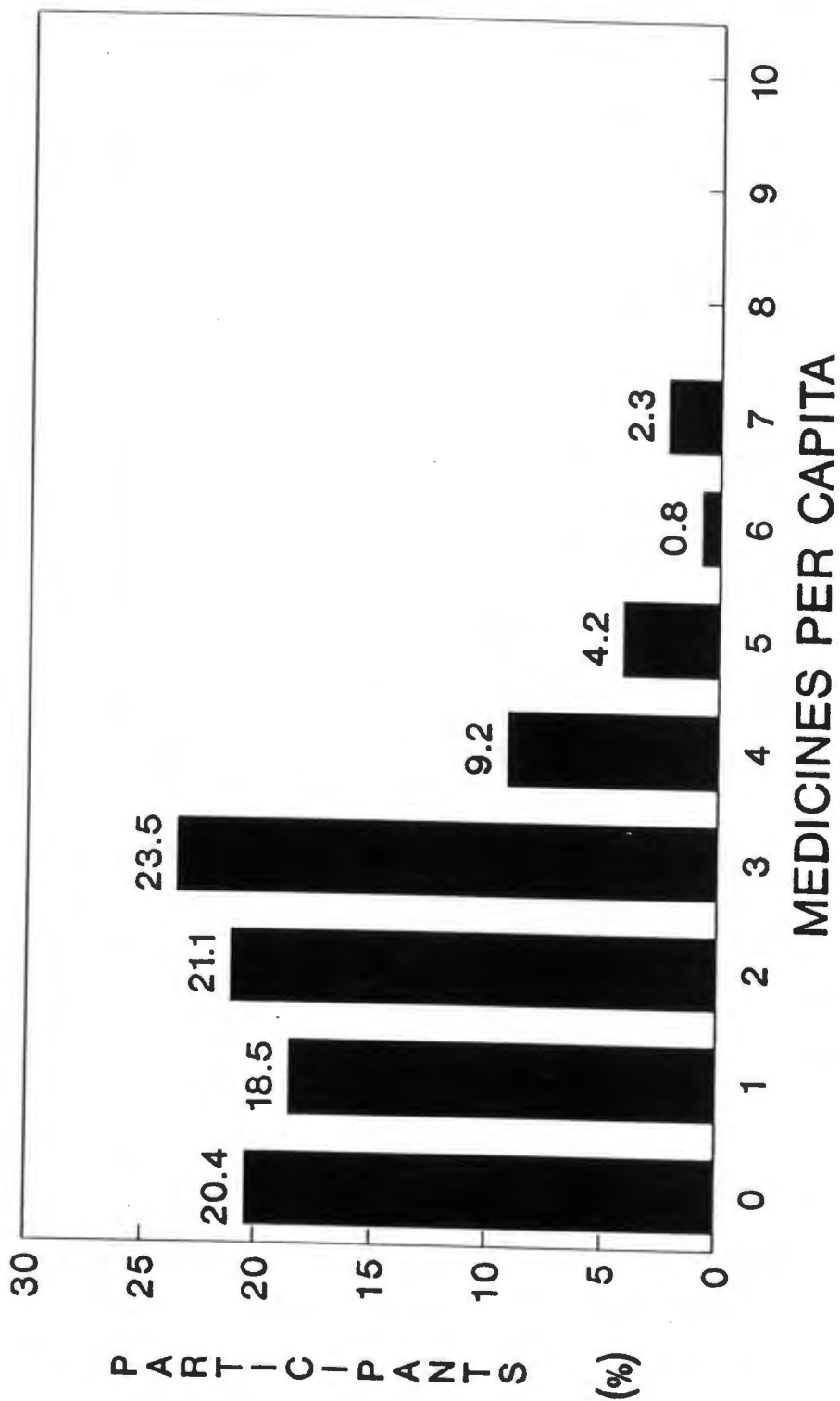
PER CAPITA USE OF ALL MEDICINES

Fig. 3.2.5.



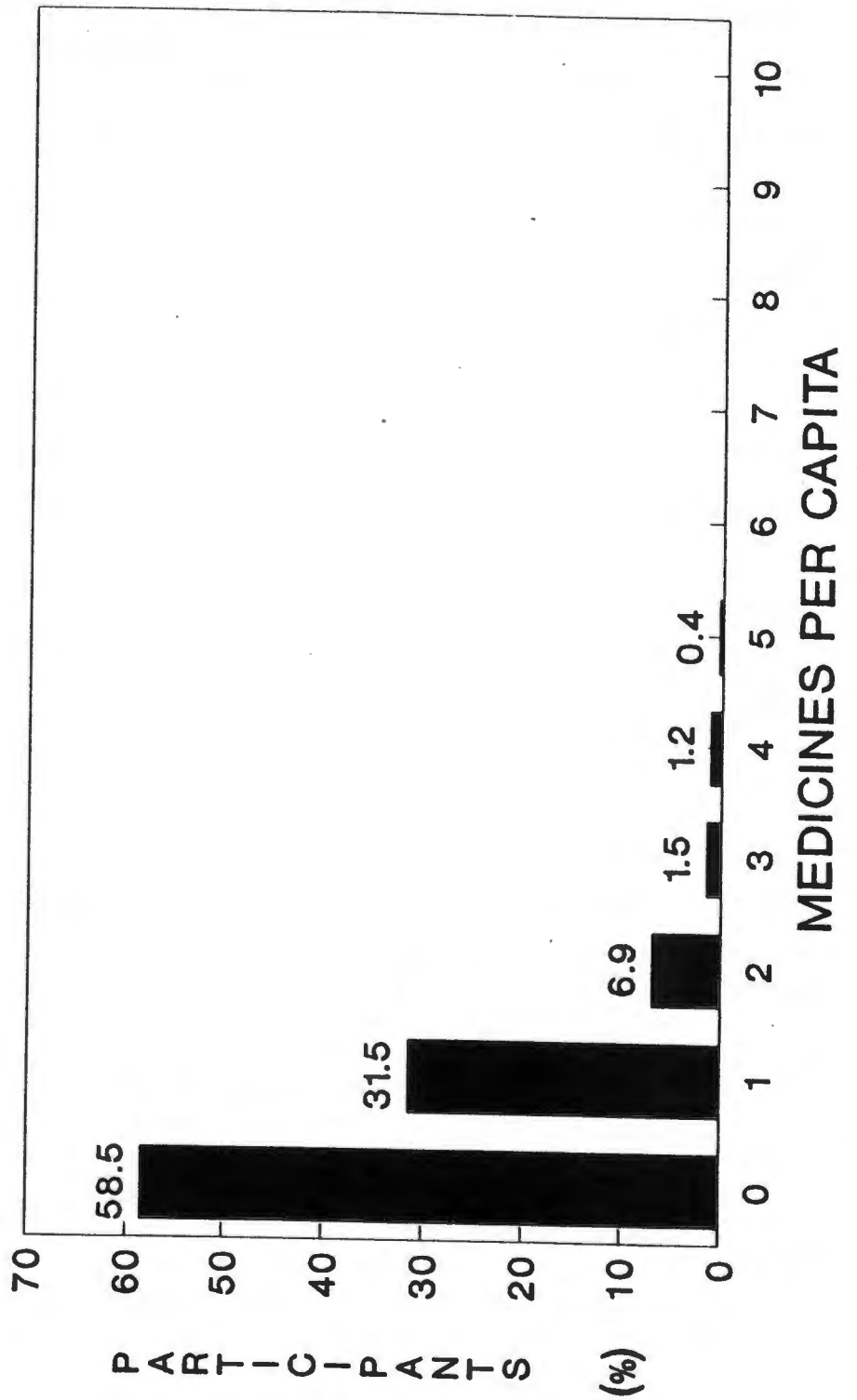
PER CAPITA USE OF PRESCRIBED MEDICINES

Fig. 3.2.6.



PER CAPITA USE OF SELF-PRESCRIBED MEDICINES

Fig. 3.2.7.



DRUG USE PATTERNS

Table 3.2.8 : Average per capita use of medicines according to smoking and drinking habits, co-habitants, retirement and state pensions.

MED.	SMOKING HABITS				DRINKING HABITS				CO - HABITANTS				RETIREMENT & PENSION	
	TYPE	SMOKER	NON-SM	DRINKS	NON-DR	SPOUSE	FRIEND	FAMILY	ALONE	RETIRE	NOT RE	PENS'N		
ALL	3.3	3.2	3.2	3.3	3.4	2	5.5	3.2	3.2	3.8	3.4			
PRESCR	2.5	2.7	2.6	2.7	2.7	0	3	2.6	2.6	2.5	2.8			
S-PRES	1.5	1.3	1.4	1.1	1.4	0	4	1.3	1.3	1.9	1.4			
A-MEDS	2.2	1.3	1.4	1.5	1.6	2	1	1.4	1.4	1.5	1.4			

Table 3.2.9 : Average per capita use of medicines according to social class and income group

MED.	SOCIAL CLASS				INCOME GROUP							
	TYPE	1	2	3	4	1	3	4	5	6	7	8
ALL	3.0	3.4	3.5	2.9	3.4	4.0	2.4	3.1	3.6	3.5	3.1	
PRESCR	2.4	2.9	2.9	2.5	2.7	3.0	2.9	2.6	2.7	2.6	2.6	
S-PRES	1.3	1.3	1.5	1.2	1.3	1.0	1.0	1.1	1.4	1.5	1.4	
A-MEDS	1.6	1.4	1.4	1.1	1.3	2.3	1.0	1.7	1.6	1.3	1.2	

Table 3.2.10 : Average per capita use of medicines according to marital status and level of education

MED.	MARITAL STATUS				LEVEL OF EDUCATION				
	TYPE	NEVER	DIVORC	WIDOW	MARR.	SD 2-4	SD 5-7	SD8-10	TERT.
ALL	3.6	4.1	3	3.3	3	3.3	3.2	3.4	
PRESCR	3	2.8	2.5	2.7	3	2.6	2.6	2.6	
S-PRES	1.5	1.4	1.3	1.3	0	1.2	1.5	1.2	
A-MEDS	1.6	1.3	1.4	1.5	0	1.4	1.4	1.6	

Tables 3.2.6. to 3.2.10. give the average per capita medicine use against patient characteristics and type of health care. From Table 3.2.6. it is apparent that there is a tendency for women to use more medicines than men - 3.3 versus 2.9 per capita respectively. There is a decline in the per capita use of self-prescribed medicines with increasing age. Analysis using Pearson's correlation coefficient has shown this to be significant ($r = -0.244$, $p = 0.0109$). Of interest is the apparent absence of any increase in the total medicine or prescribed medicine use with increasing age.

There is a higher per capita use of 3.7 medicines in the state as opposed to 3.1 in the private health care services. Analysis using Student's t-test showed that this difference was significant ($p = 0.0149$). There is no relationship between medicine supplier or medical aid and per capita use.

Similarly, no significant relationship exists between per capita use of medicines and level of education, monthly income and marital status, nor are there any obvious trends to be found with respect to per capita use and the other patient characteristics shown in Tables 3.2.8. to 3.2.10.

3.2.3 MEDICINES USED ON AN INFREQUENT VERSUS CONTINUOUS BASIS

Some of the medicines were used by the participants on a "pro re nata" or only "as required" basis. Table 3.2.11. lists in order of frequency of use, the 32 classes of drugs indicated by the participants as being used on this basis. Figure 3.2.7. shows the ten classes of drugs most frequently used on a "prn" basis. Three participants were using their antidepressant medication and one his anti-parkinsonian therapy on an infrequent basis.

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Table 3.2.11 : Classes of drugs used on an "only as required" basis

CLASSIFIC. NUMBER	DRUG CLASSIFICATION	INSTANCES OF USE	PERCENT OF TOTAL
02 08 00	Non-narcotic analgesics, antipyretics	41	26.5
11 05 00	Laxatives	15	9.7
11 04 01	Acid neutralisers	13	8.4
03 01 00	Antirheumatics (anti-inflammatory agents)	13	8.4
07 01 04	Vasodilators -coronary (angina pectoris)	10	6.5
02 06 00	Tranquillisers	9	5.8
02 09 00	Special analgesic combinations	7	4.5
05 08 00	Preps. for common cold, nasal decongestants, antihistaminics	5	3.2
11 04 00	Antacids	5	3.2
02 02 00	Sedatives, hypnotics	4	2.6
02 06 01	Phenothiazines and derivatives	4	2.6
01 02 00	Psychoanaleptics (antidepressants)	3	1.9
22 01 04	Other vitamins	2	1.3
22 01 00	Multivitamins and multivitamins with minerals	2	1.3
24 00 00	Mineral substitutes, electrolytes	2	1.3
02 03 00	Barbiturates	2	1.3
07 01 00	Vasodilators, hypotensive medicines	2	1.3
11 04 03	Antacids: other	2	1.3
05 07 01	Antihistaminics	1	0.6
22 01 02	Vitamins for prenatal use	1	0.6
05 07 02	Anti-emetics and anti-vertigo preparations	1	0.6
11 02 00	Gastro-intestinal antispasmodics and anti-cholinergics	1	0.6
07 03 00	Migraine preparations	1	0.6
20 01 01	Broad and medium spectrum antibiotics	1	0.6
17 01 00	Peripherally acting muscle relaxants	1	0.6
18 01 00	Diuretics	1	0.6
05 04 01	Anti-parkinsonism preparations	1	0.6
18 05 00	Urinary tract antiseptics	1	0.6
10 02 02	Medicines acting on respiratory system: other	1	0.6
10 01 00	Antitussives and expectorants	1	0.6
16 03 00	ENT surface anaesthetics	1	0.6
16 04 00	Naso- and bucco-pharyngeal antiseptics	1	0.6

THE TEN CLASSES OF DRUGS MOST COMMONLY USED AS "P.R.N." MEDICATION

Fig. 3.2.8.

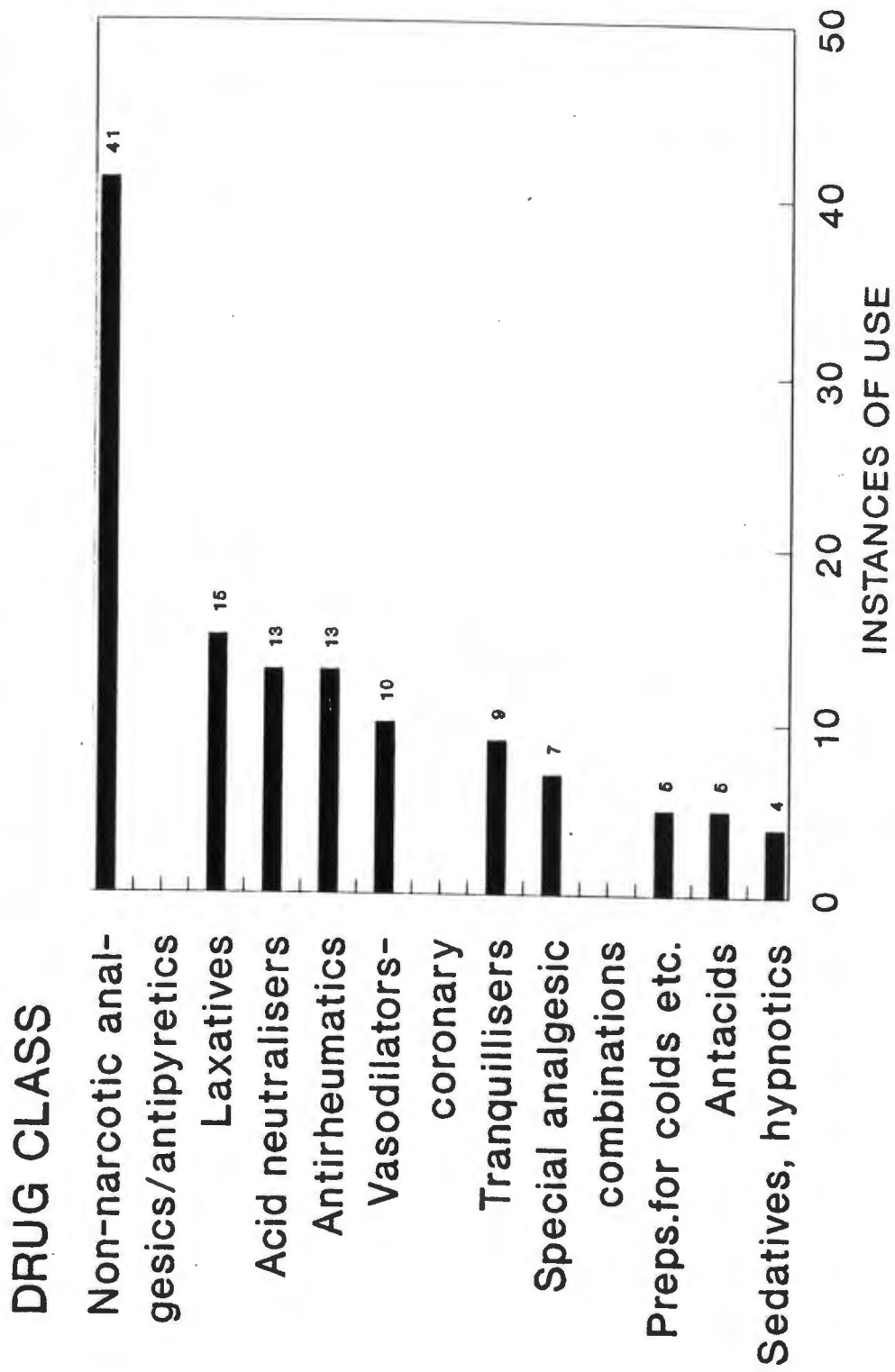


Table 3.2.12. lists those medicines used on a continuous basis by the participants. There are 55 classes of medicines being used on this basis. Some medicines such as non-narcotic analgesics, may be found on both lists. In 34 instances, the participants were using their non-narcotic analgesics on a continuous basis. Tranquillisers and sedative hypnotics also show high incidences of continuous use - 28 and 23 respectively. Continuous use of laxatives was noted in 8 instances, broad and medium spectrum antibiotics in 3 instances, and preparations for common colds, nasal decongestants, antihistaminics in 2 instances.

3.2.4 PATIENT "COMPLIANCE" WITH DOSAGE SCHEDULE

As the interviewer did not have access to patient records, adherence to dosage schedule was measured against the label instructions. In some instances, the label gave no indication of dosage schedule. The relationships between incidence of changes in dose and medicine type, gender and age, and health care service and medicine supplier are shown in Tables 3.2.13. to 3.2.15.

Twenty-six point eight percent of all medicine container labels had no dosage instructions, with a higher percent of 31.4 for prescription medicine labels. In those cases where instructions were clearly stated, participants took less than the indicated dose in 35.1% of all cases, whereas the dose was increased in 2.2%. For 62.7% of all medicines with dose instructions dosages were correctly adhered to. The highest incidence of changes in dose was in the self-prescribed group of medicines - 64.4%. This may be expected to a certain extent as medicine doses are

DRUG USE PATTERNS

Table 3.2.12 : Classes of drugs used on a continual basis by participants

CLASSIFIC. NUMBER	DRUG CLASSIFICATION	INSTANCES OF USE	PERCENT OF TOTAL
18 01 00	Diuretics	83	11.4
02 08 00	Non-narcotic analgesics, antipyretics	34	4.7
07 01 03	Other hypotensives	30	4.1
02 06 00	Tranquillisers	28	3.9
22 01 00	Multivitamins and multivitamins with minerals	27	3.7
05 02 00	Adrenolytics (sympathicolitics)	26	3.6
06 03 00	Cardiac glycosides	24	3.3
07 01 04	Vasodilators -coronary (angina pectoris)	23	3.2
02 02 00	Sedatives, hypnotics	23	3.2
22 01 04	Other vitamins	23	3.2
07 01 00	Vasodilators, hypotensive medicines	21	2.9
34 00 00	Other (homeopathic, herbal, etc)	21	2.9
03 01 00	Antirheumatics (anti-inflammatory agents)	20	2.8
24 00 00	Mineral substitutes, electrolytes	19	2.6
07 01 02	Rauwolfia:diuretic combinations	19	2.6
01 02 00	Psychoanaleptics (antidepressants)	12	1.7
21 03 00	Thyroid preparatons	11	1.5
21 02 00	Oral hypoglycaemics	9	1.2
11 05 00	Laxatives	8	1.1
05 07 01	Antihistaminics	7	1.0
02 06 01	Phenothiazines and derivatives	7	1.0
02 06 05	Central nervous system depressants: miscellaneous structures	5	0.7
07 05 00	Serum cholesterol reducers	4	0.6
08 03 00	Erythropoietics (haematinics)	4	0.6
18 05 00	Urinary tract antiseptics	3	0.4
20 01 01	Broad and medium spectrum antibiotics	3	0.4
10 02 00	Bronchodilators	3	0.4
06 02 00	Cardiac depressants	3	0.4
21 08 01	Oestrogens	3	0.4
08 01 00	Coagulants, haemostatics	2	0.3
03 03 00	Antigout preparations	2	0.3
05 08 00	Preps. for common cold, nasal decongestants, antihistaminics	2	0.3
22 01 02	Vitamins for prenatal use	2	0.3
07 01 01	Rauwolfia and combinations	2	0.3
11 04 01	Acid neutralisers	2	0.3
10 02 02	Medicines acting on respiratory system: other	2	0.3
20 01 07	Antifungal antibiotics	2	0.3
08 02 00	Anticoagulants	2	0.3

Table 3.2.12/Continued:

DRUG USE PATTERNS

Table 3.2.12.(Contd.) : Classes of drugs used on a continual basis by participants

CLASSIFIC. NUMBER	DRUG CLASSIFICATION	INSTANCES OF USE	PERCENT OF TOTAL
05 07 02	Anti-emetics and anti-vertigo preparations	1	0.1
05 04 02	Medicines affecting autonomic functions: general	1	0.1
10 01 00	Antitussives and expectorants	1	0.1
07 01 05	Vasodilators - peripheral	1	0.1
02 03 00	Barbiturates	1	0.1
20 01 00	Antibiotics and antibiotic combinations	1	0.1
11 02 00	Gastro-intestinal antispasmodics and anti-cholinergics	1	0.1
20 01 02	Penicillins	1	0.1
02 06 02	Rauwolfia alkaloids and combinations	1	0.1
20 02 00	Antimicrobials (chemotherapeutics): other than antibiotics	1	0.1
11 04 03	Antacids: other	1	0.1
21 07 00	Male sex hormones	1	0.1
01 03 00	Special antidepressant combinations	1	0.1
17 01 00	Peripherally acting muscle relaxants	1	0.1
05 01 00	Adrenomimetics (sympathomimetics)	1	0.1
22 01 05	Vitamins: B-complex with vitamin C	1	0.1
30 01 00	Biologicals: antigens	1	0.1

DRUG USE PATTERNS

Table 3.2.13 : Compliance with dosage regimens (percent) according to label instructions

DOSAGE	ALL LABELS			LABELS WITH INSTRUCTION			
	GROUP	ALL	PRESC.	5-PRES	ALL	PRESC.	5-PRES
TOTAL (n)	688	542	146	504	372	132	
Not indicated	26.8	31.4	9.6	0	0	0	
Unchanged	45.9	49.6	32.2	62.7	72.3	35.6	
Decreased	25.7	17.5	56.2	35.1	25.5	62.1	
Increased	1.6	1.5	2	2.2	2.2	2.3	

Table 3.2.14 : Relationship between changes in dosage regimen (percent) and participant gender and age

DOSAGE	GENDER		AGES (Years)						
	GROUP	MALE	FEMALE	65-69	70-74	75-79	80-84	85-89	90-94
TOTAL (n)	73	431	59	121	160	118	40	6	
Unchanged	67.1	62	59.3	60.4	69.4	53.4	77.5	50	
Decreased	31.5	35.7	39	38.8	26.9	44.9	20	50	
Increased	1.4	2.3	1.7	0.8	3.7	1.7	2.5	0	

Table 3.2.15 : Relationship between changes to dosage regimens (percent) and health care type and medicine supplier.

DOSAGE	H. CARE TYPE			MEDICINE SUPPLIER			
	GROUP	STATE	G.P.	PH'CY	DOCTOR	CLINIC	ELSEWH
TOTAL (n)	297	494	442	30	195	21	
Not indicated	20.2	30.8	32.6	36.7	13.8	9.5	
Unchanged	58.6	39.9	40.5	36.7	62.6	19.1	
Decreased	20.5	27.3	24.6	26.6	23.1	71.4	
Increased	0.7	2	2.3	0	0.5	0	

frequently tailored to the individual so as to allow for minimal side effects, but maximum efficacy. The doctor makes this adjustment when he writes a prescription for his patient, but for medicines purchased over the counter and used without medical supervision, the dose must be adjusted by the individual using the drug. Of particular note is the fact that the dose was changed in 27.7% of prescription medicines. What proportion of these changes were effected with the prescriber's knowledge was not investigated.

From Table 3.2.14. it can be seen that women are slightly more likely (38%) than men (32.9%) to change the dose. However, there does not appear to be a relationship between compliance with dosage regimens and age.

The influence of type of health care received or the medicine supplier on compliance can be seen in Table 3.2.15.. In addition to the greater tendency for the private sector supplier not to give dosage instructions on the container label, there is a higher incidence of non-compliance for those medicines received from the private sector - 29.3% as opposed to 21.2% in the public sector.

In Table 3.2.16. the change in dose is compared against the per capita use of medicines. The data are analysed for significant relationships using the Chi-square test. As the number of participants was low in groups 1, 8 and 10, the per capita categories were grouped into "Low" (Groups 1, 2 and 3), "Medium" (Groups 4, 5 and 6) and "High" (Groups 7, 8 and 10). Using these groups, no significant relationship was found to exist between

DRUG USE PATTERNS

Table 3.2.16 : Relationship between dosage changes (percent) and number of medicines taken

DOSAGE	MEDICINES PER CAPITA									
	GROUP	1	2	3	4	5	6	7	8	10
Total (n)	26	74	150	167	99	80	70	20	2	
Not indicated	26.9	31.1	22.6	22.2	30.3	35	24.3	40	0	
Unchanged	34.6	31.1	46.7	49.1	53.5	42.5	45.7	55	100	
Decreased	38.5	33.8	30	26.9	16.2	20	28.6	0	0	
Increased	0	4	0.7	1.8	0	2.5	1.4	5	0	

Table 3.2.17 : Classes of drugs where the dose indicated on the container label was exceeded

CLASSIFIC. NUMBER	DRUG CLASSIFICATION	INSTANCES OF USE	PERCENT OF TOTAL
18 01 00	Diuretics	4	36.4
11 05 00	Laxatives	1	9.1
03 01 00	Antirheumatics (anti-inflammatory agents)	1	9.1
07 01 04	Vasodilators -coronary (angina pectoris)	1	9.1
22 01 00	Multivitamins and multivitamins with minerals	1	9.1
11 04 01	Acid neutralisers	1	9.1
07 01 02	Rauwolfia:diuretic combinations	1	9.1
02 06 02	Rauwolfia alkaloids and combinations	1	9.1

the total number of medicines per capita and change in dose (Chi-square = 8.70, $p = 0.191$). However, there was a significant relationship between the number of prescribed medicines per capita and dose change (Chi-square = 28.3, $p = 0.0001$) and similarly between the dose change and the percapita use of self-prescribed medicines (Chi-square = 10.8, $p = 0.013$).

Table 3.2.17. gives in rank order, the classes of medicines where the dose indicated on the container label was exceeded. This occurred in four instances with diuretics and in only one instance with each of the other agents.

Table 3.2.18. lists those classes of drugs where the dose taken was less than that specified on the container label. The 37 classes are listed in descending order of frequency of change. The dose was most frequently reduced for the class "Non-narcotic analgesics or antipyretics".

3.2.5 DURATION OF USE

Tables 3.2.19. and 3.2.20.

Table 3.2.19. shows a tendency for the elderly to take their medicines on a long-term basis, where 44.2% of all medicines were used for 1 to 5 years and 15.1% for 6 to 10 years. The figures for prescribed medicines were similar where 44.8% were used from 1 to 5 years and 15.9% for 6 to 10 years. Six comma six percent of all medicines had been used for over 20 years. The figure was smaller - 4.5% - for prescribed medicines, but more than double - 14.7% - for self-prescribed medicines.

In Table 3.2.20. drug classes have been grouped according to duration of use as depicted in Table 3.2.19.. The classes are

DRUG USE PATTERNS

Table 3.2.18 : Classes of drugs for which the participant dose was less than that indicated on the container label

CLASSIFIC. NUMBER	DRUG CLASSIFICATION	INSTANCES OF USE	PERCENT OF TOTAL
02 08 00	Non-narcotic analgesics, antipyretics	32	18.1
34 00 00	Other (homeopathic, herbal, etc)	14	7.9
22 01 04	Other vitamins	12	6.8
11 05 00	Laxatives	12	6.8
02 06 00	Tranquillisers	10	5.6
03 01 00	Antirheumatics (anti-inflammatory agents)	10	5.6
02 09 00	Special analgesic combinations	7	4.0
11 04 01	Acid neutralisers	7	4.0
18 01 00	Diuretics	7	4.0
02 02 00	Sedatives, hypnotics	6	3.4
07 01 04	Vasodilators -coronary (angina pectoris)	5	2.8
24 00 00	Mineral substitutes, electrolytes	5	2.8
02 06 01	Phenothiazines and derivatives	4	2.3
01 02 00	Psychoanaleptics (antidepressants)	4	2.3
05 08 00	Preps. for common cold, nasal decongestants, antihistaminics	4	2.3
06 03 00	Cardiac glycosides	4	2.3
11 04 00	Antacids	4	2.3
22 01 00	Multivitamins and multivitamins with minerals	3	1.7
05 07 01	Antihistaminics	3	1.7
07 01 02	Rauwolfia:diuretic combinations	3	1.7
11 04 03	Antacids: other	2	1.1
07 01 03	Other hypertensives	2	1.1
05 02 00	Adrenolytics (sympathicolitics)	2	1.1
07 01 00	Vasodilators, hypotensive medicines	2	1.1
02 06 05	Central nervous system depressants: miscellaneous structures	1	0.6
02 03 00	Barbiturates	1	0.6
21 02 00	Oral hypoglycaemics	1	0.6
06 02 00	Cardiac depressants	1	0.6
10 01 00	Antitussives and expectorants	1	0.6
21 03 00	Thyroid preparatons	1	0.6
18 05 00	Urinary tract antiseptics	1	0.6
22 01 02	Vitamins for prenatal use	1	0.6
10 02 02	Medicines acting on respiratory system: other	1	0.6
20 01 01	Broad and medium spectrum antibiotics	1	0.6
07 05 00	Serum cholesterol reducers	1	0.6
05 07 02	Anti-emetics and anti-vertigo preparations	1	0.6
16 03 00	ENT surface anaesthetics	1	0.6

DRUG USE PATTERNS

Table 3.2.19. : Percent of all medicines, prescribed and self-prescribed medicines used for each time interval

TIME INTERVAL *(Group)	MEDICINE TYPE (%)		
	ALL	PRES.	S.PRES
Total number of medicines(n)	683	540	143
1 to 5 days (1)*	3.4	3.2	4.2
6 to 14 days (2)	3.9	3.5	5.6
14 days to 1 month (3)	2.5	2.2	3.5
1 to 6 months (4)	13.9	13.5	15.4
7 to 11 months (5)	4.1	5	0.7
1 to 5 years (6)	44.2	44.8	41.9
6 to 10 years (7)	15.1	15.9	11.9
11 to 15 years (8)	4.5	5.2	2.1
16 to 20 years (9)	1.8	2.2	-
more than 20 years (10)	6.6	4.5	14.7

DRUG USE PATTERNS

Table 3.2.20 : Grouping of drugs according to most frequent duration of use

CLASSIFIC. NUMBER	DRUG CLASSIFICATION	DURATION
05 07 01	Antihistaminics	1 - 5 days
05 07 02	Anti-emetics and anti-vertigo preparations	"
05 08 00	Preps. for common cold, nasal decongestants, antihistaminics	"
10 01 00	Antitussives and expectorants	"
10 02 00	Bronchodilators	"
16 03 00	ENT surface anaesthetics	"
20 01 01	Broad and medium spectrum antibiotics	"
20 01 02	Penicillins	"
30 01 00	Biologicals: antigens	"
05 08 00	Preps. for common cold, nasal decongestants, antihistaminics	6 - 14 days
10 02 00	Bronchodilators	"
20 01 00	Antibiotics and antibiotic combinations	"
20 01 01	Broad and medium spectrum antibiotics	"
20 01 07	Antifungal antibiotics	"
20 02 00	Antimicrobials (chemotherapeutics): other than antibiotics	"
21 07 00	Male sex hormones	"
22 01 02	Vitamins for prenatal use	14 days-1 month
05 01 00	Adrenomimetics (sympathomimetics)	1 - 6 months
05 04 01	Anti-parkinsonism preparations	"
05 07 01	Antihistaminics	"
07 05 00	Serum cholesterol reducers	"
08 01 00	Coagulants, haemostatics	"
11 02 00	Gastro-intestinal antispasmodics and anti-cholinergics	"
18 05 00	Urinary tract antiseptics	"
20 01 01	Broad and medium spectrum antibiotics	"
20 01 07	Antifungal antibiotics	"
22 01 00	Multivitamins and multivitamins with minerals	"
11 04 03	Antacids: other	7 - 11 months

Table 3.2.20/Continued:

DRUG USE PATTERNS

Table 3.2.20 (Contd): Grouping of drugs according to most frequent duration of use

CLASSIFIC. NUMBER	DRUG CLASSIFICATION	DURATION
01 02 00	Psychoanaleptics (antidepressants)	1 - 5 years
02 02 00	Sedatives, hypnotics	"
02 03 00	Barbiturates	"
02 06 00	Tranquillisers	"
02 06 01	Phenothiazines and derivatives	"
02 06 02	Rauwolfia alkaloids and combinations	"
02 06 05	Central nervous system depressants: miscellaneous structures	"
02 08 00	Non-narcotic analgesics, antipyretics	"
02 09 00	Special analgesic combinations	"
03 01 00	Anti-rheumatics (anti-inflammatory agents)	"
03 03 00	Antigout preparations	"
05 02 00	Adrenolytics (sympathicolitics)	"
05 04 02	Medicines affecting autonomic functions: general	"
05 07 01	Antihistaminics	"
05 07 02	Anti-emetics and anti-vertigo preparations	"
06 03 00	Cardiac glycosides	"
07 01 00	Vasodilators, hypotensive medicines	"
07 01 02	Rauwolfia:diuretic combinations	"
07 01 03	Other hypotensives	"
07 01 04	Vasodilators -coronary (angina pectoris)	"
08 02 00	Anticoagulants	"
08 03 00	Erythropoietics (haematinics)	"
10 01 00	Antitussives and expectorants	"
10 02 00	Bronchodilators	"
10 02 02	Medicines acting on respiratory system: other	"
11 02 00	Gastro-intestinal antispasmodics and anti-cholinergics	"
11 04 00	Antacids	"
11 04 01	Acid neutralisers	"
11 04 03	Antacids: other	"
11 05 00	Laxatives	"
16 04 00	Naso- and bucco-pharyngeal antiseptics	"
17 01 00	Peripherally acting muscle relaxants	"
18 01 00	Diuretics	"
21 02 00	Oral hypoglycaemics	"
21 08 01	Oestrogens	"
22 01 02	Vitamins for prenatal use	"
22 01 04	Other vitamins	"
22 01 05	Vitamins: B-complex with vitamin C	"
24 00 00	Mineral substitutes, electrolytes	"
34 00 00	Other (homeopathic, herbal, etc)	"

Table 3.2.20/Continued:

DRUG USE PATTERNS

Table 3.2.20 (Contd): Grouping of drugs according to most frequent duration of use

CLASSIFIC. NUMBER	DRUG CLASSIFICATION	DURATION
01 03 00	Special antidepressant combinations	6 - 10 years
02 03 00	Barbiturates	"
03 03 00	Antigout preparations	"
05 02 00	Adrenolytics (sympathicolitics)	"
05 08 00	Preps. for common cold, nasal decongestants, antihistaminics	"
06 02 00	Cardiac depressants	"
07 01 01	Rauwolfia and combinations	"
07 03 00	Migraine preparations	"
10 02 02	Medicines acting on respiratory system: other	"
11 04 03	Antacids: other	"
20 01 01	Broad and medium spectrum antibiotics	"
22 01 02	Vitamins for prenatal use	"
07 01 01	Rauwolfia and combinations	11 - 15 years
08 01 00	Coagulants, haemostatics	"
08 02 00	Anticoagulants	"
10 02 02	Medicines acting on respiratory system: other	16 - 20 years
21 08 01	Oestrogens	"
02 03 00	Barbiturates	more than 20 years
02 09 00	Special analgesic combinations	"
21 03 00	Thyroid preparatons	"
21 08 01	Oestrogens	"

allocated to the time interval for which they were most frequently used. Some classes which were used an equal number of times for two or more time intervals are shown in both time interval groups. For example, "adrenolytics (sympathicolitics)" appears under time interval groups 6 and 7 because it was marked 9 times under group 6 (1 to 5 years) and 9 times under group 7 (6 to 10 years). It should be noted that in many cases medicines were not used on a continual basis throughout the time period shown. For example, the class "Broad and medium spectrum antibiotics" is shown in the 6 to 10 years group, but as can be seen in Table 3.2.11, the medicines in this class may have been used on a "only as required" basis.

3.3 KNOWLEDGE SCORE

The knowledge score is a measure of the number of correct answers given to the questions posed in the interview schedule. As the possible maximum score varies from 15 to 21 depending on the medicine, the knowledge score is expressed as a percentage of the maximum possible for the medicine under review.

3.3.1 KNOWLEDGE SCORE VARIATION WITH MEDICINE TYPE

Table 3.3.1.

It can be seen in Table 3.3.1, that from a total of 693 medicines, the mean knowledge score was 54.7% with a maximum of 93.3% and a minimum of 9.5%. Although the figures appear to be slightly lower for prescribed medicines - 53.7%, 86.7% and 9.5% respectively, and higher for self-prescribed medicines - 58.5%, 93.3% and 15.8% respectively this was not significant (Pearson correlation coefficient $r = 0.012$, $p = 0.8778$).

KNOWLEDGE SCORE

Table 3.3.1 : Relationship between know score and medicine type

KNOW. SCORE	MEDICINE TYPE		
	ALL	PRESCR	S - PR
(n)	693	544	149
MEAN	54.7	53.7	58.5
MAX.	93.3	86.7	93.3
MIN.	9.5	9.5	15.8

Table 3.3.2 : Relationship between knowledge scores and participant gender and age (years)

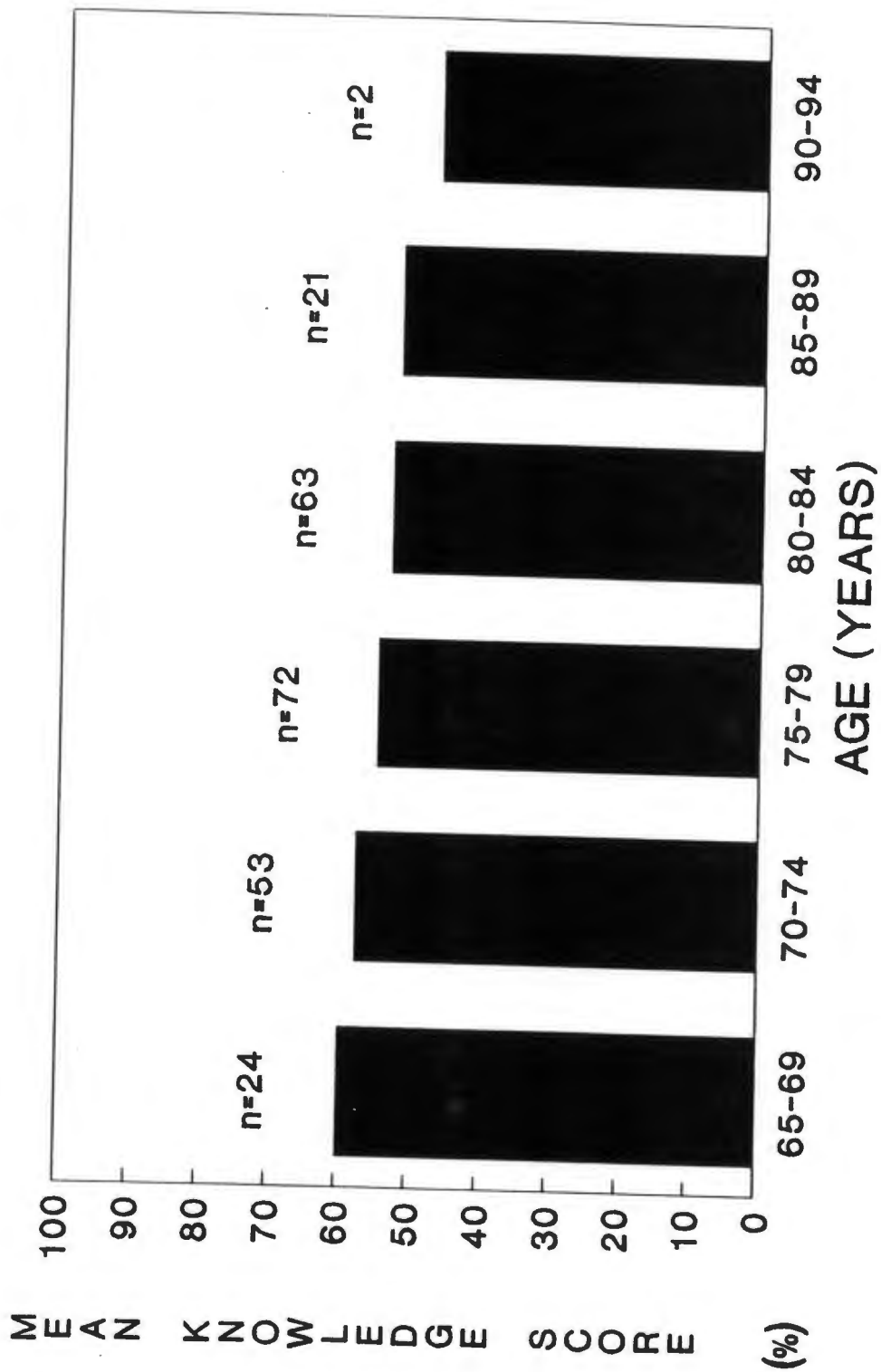
KNOW. SCORE	GENDER			AGE					
	ALL	MALE	FEMALE	65-69y	70-74y	75-79y	80-84y	85-89y	90-94y
(n)	693	111	582	24	53	72	63	21	2
MEAN	54.7	54.4	54.8	59.8	57.5	54.7	53.0	52.0	46.7
MAX.	93.3	84.2	93.3	72.0	76.7	78.0	71.0	71.7	49.8
MIN.	9.5	15.8	9.5	50.0	35.5	27.7	33.3	28.6	43.5

Table 3.3.3 : Relationship between knowledge scores and health care type, medicine supplier and satisfaction with information provided by the health care professionals.

KNOW. SCORE	HEALTH CARE TYPE					SUPPLIER			SATISFACTION	
	CLINIC	GP	M.AID	NO AID	PH'CY	DOCTOR	CLINIC	OTHER	YES	NO
(n)	94	171	352	341	194	10	60	11	582	108
MEAN	54.4	55.4	55.3	54.2	55.1	60.8	53.3	59.2	55	53.6
MAX.	78	78	93.3	86.7	78	73.3	72.3	76.7	86.7	93.3
MIN.	28.6	27.7	9.5	23.8	27.7	41.2	31.6	47.4	9.5	23.8

RELATIONSHIP BETWEEN MEAN KNOWLEDGE SCORE AND AGE

Fig. 3.3.1.



3.3.2 KNOWLEDGE SCORE VARIATION WITH PARTICIPANT CHARACTERISTICS

Tables 3.3.2. to 3.3.6.

The relationship between mean, maximum, and minimum knowledge scores and patient characteristics is shown in Tables 3.3.2. to 3.3.6.. In some groups, the sample size (n) is very small and in categories such as "Level of education, Standards 2 to 4" and "Social class 5", only the mean knowledge score is quoted as there is one participant in each group and no maximum or minimum score.

Examination of these tables reveals very little variation among the knowledge scores for each participant characteristic. No significant relationship was found to exist between knowledge score and:

1. level of education, monthly income, social class, marital status, co-habitants, and smoking or drinking habits, using Pearsons correlation coefficient
2. gender and satisfaction with information supplied by health care professionals using Students t-test
3. participant medicine supplier using the Analysis of variance.

However, it can be seen from Table 3.3.2 and Figure 3.3.1. that mean knowledge score declines with increasing age. Further analysis using Pearsons correlation coefficient demonstrated a significant but inverse relationship between participant age and knowledge score ($r = -0.260$, $p = 0.0001$). This significant relationship between participant age and knowledge score was found to still exist when prescription medicines only were analysed (Pearsons correlation coefficient $r = -0.245$, $p = 0.0004$). However, there was no significant relationship in the case of self-

KNOWLEDGE SCORE

Table 3.3.4 : Relationship between knowledge scores and smoking habits, drinking habits, co-habitants, retirement and state pensions.

KNOW. SCORE	SMOKING HABITS		DRINKING HABITS		CO - HABITANTS				RETIREMENT & PENSION		
	SMOKER	NON-SM	DRINKS	NON-DR	SPOUSE	FRIEND	FAMILY	ALONE	RETIRE	NOT RE	PENS'N
(n)	38	195	176	58	56	0	2	177	224	11	72
MEAN	55.3	55	55.1	55.1	56.1	-	56.2	54.8	55	57.4	53.7
MAX.	73	78	78	68.4	78	-	61.4	76.7	78	66.2	72.3
MIN.	35.5	27.7	27.7	33.3	40.1	-	51.1	27.7	27.7	42.9	28.6

Table 3.3.5 : Relationship between knowledge scores against social class and income category

NOTE: n = 1 for Social class 5: Mean Score = 65.8

KNOW. SCORE	SOCIAL CLASS				INCOME GROUP							
	1	2	3	4	1	3	4	5	6	7	8	
(n)	101	76	44	12	12	3	9	25	45	30	62	
MEAN	55	55.7	54.3	54.2	54.2	52	55.3	55.5	56.4	57.6	56	
MAX.	78	76.7	72	63.8	73	66.7	64.7	73.3	72.9	78	72.3	
MIN.	28.6	27.7	35.7	33.3	40.1	42.4	42.8	27.7	33.3	41.2	33.3	

Table 3.3.6 : Relationship between knowledge scores and participant marital status and level of education.

KNOW. SCORE	MARITAL STATUS				LEVEL OF EDUCATION			
	NEVER	DIVORC	WIDOW	MARR.	SD 2-4	SD 5-7	SD8-10	TERT.
(n)	31	17	132	55	1	45	140	49
MEAN	58.1	57.6	53.6	56	47.6	55.2	55.4	54.2
MAX.	73.3	71.5	76.7	78	.	68.4	76.7	78
MIN.	35.5	43.7	27.7	40.1	.	37.6	27.7	33.3

prescribed medicines only. (Pearson correlation coefficient $r = -0.159$, $p = 0.0999$).

Although not readily apparent from Table 3.3.3., when tested using the analysis of variance, a significant relationship ($p = 0.0001$) was found to exist between the knowledge scores and the health care type.

3.3.3 KNOWLEDGE SCORE VARIATION WITH PATTERNS OF DRUG USE

Tables 3.3.7. and 3.3.8.

Table 3.3.7 shows the mean, maximum and minimum knowledge scores for participants versus their percapita use of medicines. It is apparent that there is no obvious relationship between the number of medicines used and knowledge score. This was confirmed by analysis using Pearsons correlation coefficient ($r = -0.106$, $p = 0.1$)

Similarly, there is no relationship between knowledge score and duration of medicine use (Table 3.3.8). Pearsons correlation coefficient ($r = 0.046$, $p = 0.22$). To facilitate the use of this test, all time intervals were converted to days.

3.3.4 KNOWLEDGE SCORE CHARACTERISTICS.

Tables 3.3.9. and 3.3.10

In these tables the percentage of correct answers for each knowledge score question is shown. Table 3.3.9. shows the percentage of correct answers against participant gender and age, and Table 3.3.10 shows the percentage of correct answers against health care type and medicine supplier.

KNOWLEDGE SCORE

Table 3.3.7 : Relationship between knowledge score and per capita use of medicines

KNOW.	MEDICINES PERCAPITA									
SCORE	1	2	3	4	5	6	7	8	10	
(n)	26	45	58	48	23	19	12	3	1	
MEAN	54.9	56.2	55.3	56.3	55.1	53.2	48.6	58.9	44.7	
MAX.	73.3	70.2	78.0	72.0	73.0	68.2	66.2	62.9	44.7	
MIN.	33.3	28.6	27.7	31.6	35.5	37.6	42.6	55.8	44.7	

Table 3.3.8 : Relationship between knowledge score and duration of medicine use

KNOW.	DURATION OF USE (Groups)									
SCORE	1	2	3	4	5	6	7	8	9	10
(n)	23	27	17	95	28	302	103	31	12	45
MEAN	54.9	54.7	49.9	54.6	55.4	54.3	55.7	59.6	56.4	55.3
MAX.	93.3	76.5	63.2	82.4	80.0	86.7	80.0	86.7	86.7	76.5
MIN.	31.6	9.5	26.3	23.8	28.6	21.1	28.6	31.6	33.3	36.8

KNOWLEDGE SCORE

Table 3.3.9 : Relationship between percent correct answers given for each knowledge score question and participant gender/age (years)

QUESTION	PERCENT FOR GENDER AND AGE GROUP (Years)								
	ALL	MALE	FEMALE	65-69	70-74	75-79	80-84	85-89	90-94
Name and Strength (Q2+Q3)	52	52.9	51.8	52.4	59.3	51.8	49.1	36	66.7
Name or Strength (Q2 or Q3)	22.8	19.2	23.5	25.4	17.9	23.3	25.7	22	33.3
Reason for Use (Q4)	86.7	77.5	88.4	91.8	86.1	88.2	83.7	87	71.4
Dose Frequency (Q5)	84.9	86.4	84.7	87.7	86.3	83.3	84.7	83.3	85.7
Maximum Dose (Q6)	16.9	7.7	19.2	29.4	12.2	27.6	9.7	11.1	0
Dose Quantity (Q7)	91.2	89.1	91.5	87.8	94.2	93.1	87.8	92.6	71.4
Manner of Use (Q8) (i)	18	18.35	17.9	13.7	20.5	21.4	11.8	22.2	33.3
Manner of Use (Q8) (ii)	79.5	78.9	79.6	84.9	76.6	76.1	85.4	75.9	66.7
Duration Use-Previous (Q9)	88.1	92.6	87.2	91.9	91.2	88.7	84.1	83.3	85.7
Duration Use-Expected (Q10)	36.4	36.7	36.3	41.9	41.7	32.1	33.7	38.9	14.3
Medicines to Avoid (Q11)	0.8	1.9	0.6	2.9	0	1	0.6	0	0
Reasons (Q12)	0.3	1	0.2	2.9	0	0	0	0	0
Foods to Avoid (Q13)	4	5.1	3.7	10.5	3.8	3.3	2	6.2	0
Reasons (Q14)	3.5	2.6	3.7	10.5	1.9	3.4	2	6.2	0
Alcohol to be avoided (Q15)	7.7	6.9	7.8	22.7	7.1	6.8	5.4	2.8	0
Reasons (Q16)	2.4	1.4	2.6	6.8	3.6	2	0.9	0	0
Side Effects (Q17)	19.8	25.2	18.7	27	22.7	17.6	15.8	20.4	28.6
Corrective Action (Q18)	64.8	64.1	65.2	100	65.8	41	69.2	100	-
Reading for Information(Q23)	56	63.5	54.6	79.2	68	53.6	42.5	44.4	0

KNOWLEDGE SCORE

Table 3.3.10. : Percent correct answers for each Knowledge score question against health care type and medicine supplier

KNOWLEDGE SCORE	H.CARE TYPE (%)			MEDICINE SUPPLIER (%)		
	QUESTION	GP	STATE	PH'CY	Dr.	CLINIC
Name and Strength (Q1+Q2)	54.2	50.4	53	72.4	42.5	80.9
Name or Strength (Q1 or Q2)	22.9	22	23.2	20.7	24.1	4.8
Reason for Use (Q4)	86.7	87.2	85.8	93.3	87.1	90.5
Dose Frequency (Q5)	83.1	68.6	83.7	85.7	88	81
Maximum Dose (Q6)	14.3	25.5	11.7	57.1	21.6	11.1
Dose Quantity (Q7)	90.7	92	91.5	89.7	90.3	95.2
Manner of Use (Q8) (i)	16.8	19.3	16.6	16.7	20.2	30
Manner of Use (Q8) (ii)	80.8	79	80.9	80	77.2	70
Duration Use-Previous (Q9)	87.6	43.1	88	86.2	87.6	95
Duration Use-Expected (Q10)	34.9	38.3	37.1	37	36.3	20
Medicines to Avoid (Q11)	1.1	0	1.2	0	0	0
Reasons (Q12)	0.4	0	0.5	0	0	0
Foods to Avoid (Q13)	3.7	4	4.7	0	3.4	0
Reasons (Q14)	3.7	3	3.9	0	3.4	0
Alcohol to be avoided (Q15)	7	8.1	6.6	10	9.2	11.1
Reasons (Q16)	2.5	1.4	2.2	10	2.1	0
Side Effects (Q17)	20.6	17.9	19.3	26.7	19.7	20
Corrective Action (Q18)	70.8	58.6	67.1	100	54.8	0
Reading for Information(Q23)	55.4	52.3	56.5	56.3	54	65.2

On examination of the data presented in Table 3.3.9. and Figure 3.3.2. the most outstanding feature is the low score rate for the questions concerned with possible interactions with other medicines, foods and alcohol. Only 0.8, 4 and 7.7% respectively of answers were correct to questions on what medicines to avoid, what foods to avoid and whether alcohol is contra-indicated. Similarly, the reasons for avoidance were mostly not known - 0.3, 3.5 and 2.4% correct answers respectively.

The score with respect to side effects was also low at 19.8%, although in 64.8% of cases the participants indicated correctly what would be the best course of action if side effects were experienced.

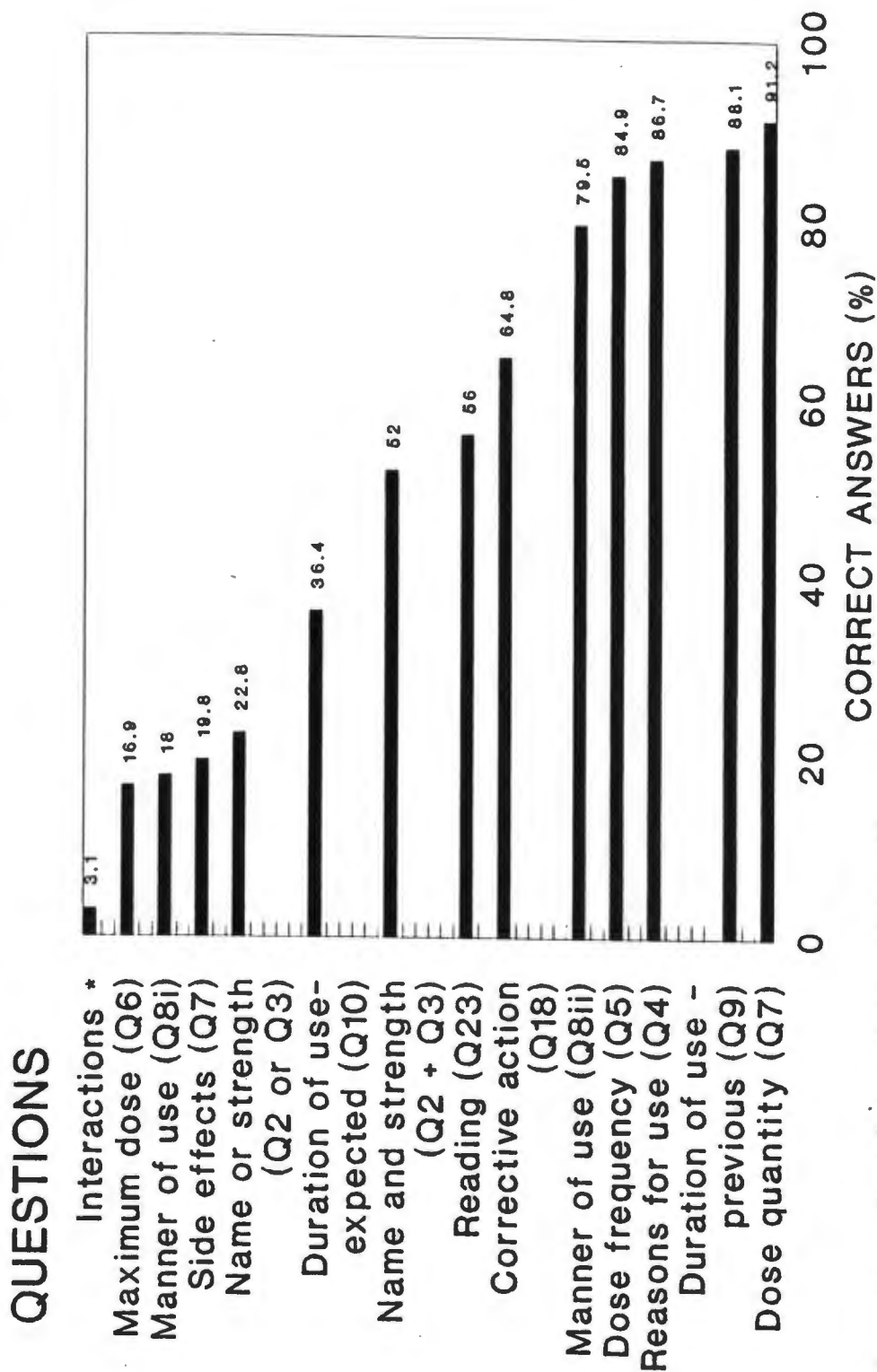
In contrast scores for reasons for use, dose frequency, dose quantity, and duration of use (previous) were all over 80% with manner of use indicated correctly in 79.5% of cases. Name and strength of the medicine were correctly given in 52% of cases and just over half (56%) of the participants "read up" about their medicines to try and find out more information about them.

The scores for male and female participants show little variation.

The biggest differences lie with "Reason for use" and "Reading for information". A higher percent of females correctly indicated the reason for use of their medicine - 88.4%, as against 77.5% for males. In the case of further reading, the converse is true with a higher percentage of males than females scoring correctly - 63.5%, compared with 54.6% of females. This may help to explain why there was no significant relationship between overall average knowledge score and gender.

CORRECT ANSWERS PLOTTED AGAINST QUESTIONS ASKED

Fig. 3.3.2.



* - Answers for Questions 11 to 16

A significant decline in knowledge score with increasing age was noted earlier. From the results presented in Table 3.3.9, it appears a similar trend is followed in the questions concerning duration of use (previous), possible interactions with medicines, foods and alcohol, possible side effects, and further reading for information.

The data presented in Table 3.3.10. reveals few differences between the percent of correct answers given by private patients and by state care patients. The notable exceptions are:

1. dose frequency - correctly answered by 83.1% of participants who attend a general practitioner compared with 68.6% who attend a state clinic,
2. duration of use (previous) - 87.6% versus 43.1% and
3. correct action with respect to side effects - 70.7% versus 58.6%.

Table 3.3.10 also shows the percent correct answers for each knowledge question against the participant's main supplier of medicines. The group of participants supplied by their doctor is small and includes only 12 participants which limits the potential for meaningful comparison. The doctor group gave a higher percent of correct answers than either the private pharmacy or clinic groups for the questions on name and strength of the medicine, reasons for use, avoidance of alcohol and correct action with respect to side effects. However, they scored 0% for the questions on medicines and on foods to be avoided and the reasons for avoiding them.

Participants in the group purchasing their medicines "Elsewhere" gave the highest percent of correct answers for name and

strength of medicines, dose quantity, manner of use, duration of use (previous), avoidance of alcohol and further reading for information. They scored 0% however, for the questions concerning reasons for avoiding alcohol, avoidance of medicines and foods and the reasons, and the correct action to be taken if side effects occur.

In common with the two previous groups, the participants supplied by the clinic gained zero score for the questions on other medicines to be avoided and the reasons for avoiding them. Of all the supplier groups, the clinic group scored lowest with respect to the name and strength of the medicine with 42.5% of answers being correct. In other respects, the score pattern for the clinic group is very similar to that for the group supplied by private pharmacies.

The private pharmacy group did not score 0% for any of the questions, but still had a low percent of correct answers for the questions concerning avoidance of interacting medicines, foods, and alcohol. The pharmacy group scored lowest of all the groups on questions on reasons for use of the medicine, avoidance of alcohol, and possible side effects.

3.4 LABEL SCORE

3.4.1 LABEL SCORE CHARACTERISTICS

The label score was composed of a set of 10 questions, with a maximum possible score of 10 points. Table 3.4.1. lists these questions and shows the percentage of correct answers received for each question according to type of medicine and medicine

LABEL SCORE

Table 3.4.1 : Percent correct answers for each label score question according to medicine type and health care supplier

LABEL SCORE QUESTION	MEDICINE TYPE (%)				MEDICINE SUPPLIER (%)		
	ALL	PRESC.	S-PRES	PH'CY	Dr	CLINIC	ELSWH.
Legibility:Medicine name(Q1)	75.6	77.9	67.1	91.3	100	81.8	73.8
Legibility:Directions (Q2)	72.7	77.4	55.7	91.3	100	81.8	63.9
Drug name (Q3.a + b)	20.9	9.1	64.4	2.3	0	6.8	36.1
Drug name (Q3.a or b)	68.8	80	28.2	95.8	100	93.2	63.9
Directions:Quantity (Q4.a)	73.3	69.5	87.2	71.1	63.6	98	82.2
Directions:Frequency (Q4.b)	69.7	66.9	79.9	68.1	63.6	93.9	76.7
Directions:Manner (Q4.c)	16.9	11.8	35.6	9.1	9.1	21.6	28.7
Directions:Duration (Q4.d)	11.1	5.7	30.7	1.9	0	0	35.6
Patient name	61	77.4	1.3	98.9	81.8	97.3	3.5
Dispenser (manuf.) name	86.1	84.7	91.3	99.2	90.9	99.3	87.1
Total score (mean)	63.8	56.9	60.6	63.1	60.9	68	61.5

supplier group. The mean label score expressed as a percentage, is also shown for each group.

The differences among the mean label scores were small, regardless of medicine type or supplier. Prescribed medicines had the lowest score of 56.9%. The mean label score for all medicines was 63.8%. Of the supplier groups, the clinic group had the highest score of 68% and the doctor group the lowest of 60.9%.

On examination of the percent correct answers for each label score question, it is apparent that little information on manner of use of the preparation and on duration of use are provided on the label. Information on manner is provided on 35.6% of self-prescribed medicine labels, but only on 11.8% of prescribed medicine labels. For duration of use, the values are lower with information appearing on 30.7% of self-prescribed medicine labels, and 5.7% of prescription medicine labels. Low scores for these points are also found for the labels of medicines supplied by private pharmacies (9.1% and 1.9%), doctors (9.1% and 0%), and clinics (21.6% and 0%), the only legally permitted suppliers of prescribed medicines.

The labels on prescribed medicines are more likely to have only the proper name of the medicine, or its descriptive name or indication - 80% - than to have both shown on its label - 9.1%. The converse is true with self-prescribed medicines, with 64.4% showing both name and indications, but 28.2% showing only one or the other. Labels of medicines supplied by private pharmacies, doctors or the clinics also have a low incidence of showing both name and indication on the label with the incidence ranging from 0% to 6.8%.

The labels on self-prescribed medicines tend to be less legible than those on prescribed medicines. Participants could read the name and instructions in 67.1% and 55.7% of instances respectively. The comparative values for prescribed medicines were 77.9% and 77.4% respectively. The legibility scores for medicines purchased "Elsewhere" were also lower than those for medicines obtained from the 3 other supply groups.

3.4.2 LABEL SCORE RELATIONSHIP TO KNOWLEDGE SCORE

The relationship between knowledge score and label score was analysed using Pearsons correlation coefficients. No significant relationship was found to exist.

CHAPTER 4

DISCUSSION OF RESULTS

4.1 PATIENT CHARACTERISTICS

It was not the aim of this work to establish the socio-economic characteristics of the South African elderly. These data were collected primarily with the intention of establishing the identity of the study population and how this was related to drug use patterns and participant knowledge of the medicines used.

A potential criticism is that the study population was limited to predominantly female, relatively well-educated upper to upper-middle class, Caucasians living in old-age residences, which represents a relatively small percentage of the South African elderly. However, it was impossible for a single investigator to include all racial, social and cultural groups and it is hoped that the knowledge gained will stimulate further comparative studies. An advantage of the population in this project is that it was fairly typical of a first-world geriatric group and therefore allowed for ready comparison with similar published studies, particularly from the United Kingdom and the United States of America.

Patient selection may have accounted for the fact that the majority of participants were over 70 years and only one fifth were male. Although the relatively small male sample of 49 participants enabled comparison of sex-related data, a larger sample is likely to have provided more meaningful information.

That 87% of participants were single, of whom almost all were living alone emphasises the need for community support groups and the regular follow up of elderly patients.

The finding that only 16.2% of participants were smokers is interesting as this is considerably less than the figure of 44.6% quoted by Van der Burgh (1979) for the general white population. This discrepancy may be due to a number of differences between the two sample groups. Van der Burgh did not include the over 60 year olds in his study whilst the sample group chosen for this study specifically excluded participants under 65 years. In addition, participants who spoke only Afrikaans were excluded from this study, and the population was heavily weighted with female participants. Women in Van der Burgh's study had a lower incidence of smoking and there was a decline in the proportion of smokers in the 50 to 59 years age group. The findings in this study demonstrate that this decline in the number of smokers continues as age increases. The reasons for this are beyond the scope of this research but factors playing a role may include increased mortality due to smoking which would select out smokers, possible increased awareness of the health hazards of smoking with the greater frailty and incidence of illness associated with aging, or simply that the elderly can no longer afford the habit. The proportion of light smokers is also much higher in this study group than in Van der Burgh's work. There is no clear explanation for this.

However, in line with Van der Burgh, approximately one quarter of participants claimed to be teetotallers which may be an indication that drinking habits do not change substantially with

increasing age. Although nearly as many females as males drank alcohol, it is apparent that women drink less than men with half of the so-called drinkers only imbibing approximately once monthly on special occasions. The over 85 year olds were an exception as more than 95% are drinkers with half embibing 6-7 days per week. Although this group is small (23 participants) and therefore the results may be misleading, the relatively high rate of alcohol consumption may point toward increased loneliness and depression associated with advanced age. This warrants further investigation.

It is well known that the incidence of disease increases with advance in age, and the rise in general practitioner attendance with greater age noted in this study is in keeping with this. A similar trend would have been expected for state clinic attendance, but there is no obvious explanation why this was not the case. With the high number of registered dispensing doctors in South Africa, it is surprising that only 5% of participants received their medicines from their doctors. The fact that the interviewer introduced herself as a pharmacist may have biased the participants answers, although it is also possible that most practitioners attended by the limited study sample did not dispense their own prescriptions.

4.2 DRUG USE PATTERNS

4.2.1 SIMILARITIES TO USA AND UK ELDERLY

The drug use patterns of this sample of South African elderly are similar to those of the elderly of the United States of America and Britain in the following aspects.

4.2.1.1 MEDICINES USED

Despite the use of different classification criteria, the first of these similarities can be seen in the drugs most frequently used by the elderly. In this study, the 3 most frequently used of all medicines were: 1. non-narcotic analgesics, 2. diuretics and 3. laxatives. For prescribed medicines, the ranking was slightly different with diuretics first, non-narcotic analgesics second and tranquillisers third. In their study of the elderly of England, Cartwright and Smith (1988) found that the ranking for prescribed medicines was almost identical to that described above. Diuretics were the most frequently prescribed, analgesics were second and hypnotics, sedatives and anxiolytics third. Stewart (1988) found a slightly different ranking of prescribed and self-prescribed medicines among elderly Americans with vitamins most commonly used, analgesics second and cardiovascular medicines third. If, in the present study all vitamin containing preparations are grouped together, vitamins are the third most frequently used of all medicines and the most frequently self-prescribed.

4.2.1.2 PER CAPITA USE OF MEDICINES

The average per capita use of medicines also shows little variation from American and British studies. In this study, the average per capita use for all medicines, prescribed and self-prescribed medicines was 3.2, 2.6 and 1.4 respectively. In elderly hospital outpatients, Davis (1987) found a higher figure of 4.57 per patient. Four point three medicines per capita were used by the USA elderly in the study undertaken by Kiernan et al (1980). In their recent update on the patterns of drug use in the elderly population of Dunedin, Florida, USA, Hale et al

(1987) note that there the average number of medicines (including both prescribed and self-prescribed) per participant is 3.7. Cartwright and Smith (1988) discovered that on average, the British elderly were taking 1.90 prescribed medicines and 0.85 self-prescribed medicines per capita. The different inclusion criteria for the drugs as used by the researchers may help to explain the small variations in the per capita usage rates. In this study all medicines used over a 2 week period were considered, whereas Kiernan and Hale considered only medicines that were used regularly over a period of years, and Cartwright and Smith considered only medicines that were used within a 24 hour period. It could not be ascertained from the present study whether per capita use of medicine by the elderly had increased over time, as was reported by Hale et al. (1987) and Cartwright and Smith (1988).

Nearly six percent - 5.8% - of the participants in this study claimed to use no medication at all. Similarly, Hale et al. found that 6.7% of their study population was using no medicine. Only half the participants in Cartwright and Smith's study were using self-prescribed medicines as was the case in this study. However, self-prescribed medicines may be under-reported as they are often used on an infrequent basis and may be forgotten about at the time of interview.

Stewart (1988) noted that American women may use up to twice as many drugs as men. Whilst a similar trend was noticed in this study, the ratio was not so large with the average per capita use rate being 3.3 for women and 2.9 for males.

4.2.1.3 COMPLIANCE WITH DOSAGE INSTRUCTIONS

In their assessment of prescribed medicines, Cartwright and Smith found that one fifth of the container labels had non-specific instructions such as "Take as directed". The proportion was much higher in this study, with nearly one third - 31.4% - of all prescription medicine labels having no dose instructions. When assessed against those labels with more explicit instructions, 27.7% of participants were found to be non-compliant with the schedule for their prescribed medicines. A similar incidence of non-compliance was found by Cartwright and Smith, where one quarter of the British elderly interviewed were not taking their medicine as prescribed. As in the present study, the majority of changes were reductions in dose with only 1% of the participants taking more medicine than prescribed. The study undertaken by Kiernen et al. revealed a higher non-compliance incidence of 36% for prescribed medicines used on a regular basis. The participants were also more likely to decrease their medicine doses (30%) than to increase them (6%).

The finding by Wandless et al. (1979) that elderly British women are more inclined than men to be non-compliant was confirmed in this study (38% and 32.9% respectively). However, unlike Wandless, this study did not find that there was a tendency for the elderly to become more non-compliant with increasing age. Hulka et al (1976) found that the greater the number of medicines to be taken and the more complex the dosage regimen, the poorer the patient compliance. This was also found to be the case with respect to prescribed medicines and self-prescribed medicines in this study. The higher the number of medicines that the participant was using the greater the likelihood that he or she would deviate from the recommended dose.

4.2.1.4 DURATION OF USE

Long term use of medicines is a common phenomenon amongst the elderly (Law et al. 1976, Murdoch 1980, Kiernen 1981). In their study, Cartwright and Smith found that for prescribed medicines, 43% had been used for 1 to 5 years, and 16% had been used for 6 to 10 years. The figures are virtually identical from this study with 44.2% of all medicines being used from 1 to 5 years and 15.9% being used for 6 to 10 years.

4.2.1.5 IMPLICATIONS OF DRUG USE PATTERN RESULTS

Ninety-five percent of the participants were using some kind of medicine, and approximately five sixths of all medicines were prescribed. This may be taken as an indication of the responsibility and involvement of the health care professionals in the well-being of the elderly.

In their year-long study into adverse drug reactions in the elderly, Williamson and Chopin (1980) identified certain drugs with increased risk of adverse reactions in the elderly user. The risk was greatest with hypotensives, antiparkinsonian drugs and psychotropics. However, the incidence of adverse drug reactions was highest for diuretics, antidepressives, tranquillisers and psychomimetics, and digitalis.

These are important points to bear in mind when considering the medicines used by the participants in this study. Of particular concern is the fact that psychotropics carry a high adverse drug reaction risk factor and yet when all the classes of

psychotropics are grouped together, they are found to be the most commonly used of all medicines in this study. In addition in most cases, the participants indicated that they were using these drugs on a regular basis and had been doing so for at least 1 to 5 years or longer. As the participants in this study were independent active members of the community, their continuing need for such preparations warrants further investigation.

More problematic is the high use of non-narcotic analgesics and antirheumatics (anti-inflammatory agents). Castelden et al. (1988) identified gastro-intestinal bleeding as the most commonly reported adverse drug reaction in the elderly and found that non-steroidal analgesics were the agents most often responsible. As it is unreasonable to expect the elderly to go without these pain relieving drugs, careful follow up and monitoring is important if they are being used on a regular and long-term basis. In many cases the participants indicated that these drugs had been used regularly for periods of 1 year or more. In addition, non-narcotic analgesics are the most frequently used of self-prescribed medicines indicating that often these preparations are used without regular professional supervision. Patient counselling on the correct use of these drugs and their potential side effects becomes essential in the light of these findings.

Of all self-prescribed medicines the second most commonly used was homeopathic or herbal preparations - 14%. Whilst at first, this may appear to be inconsequential, there has in recent years been an increase in reports of adverse drug events following the use of herbal remedies (Report : The Pharmaceutical Journal of

the Royal Pharmaceutical Society of Great Britain 1989; MacGregor et al. 1989). These preparations are frequently promoted as being "natural" and therefore harmless, but in common with "synthetic" drugs inappropriate use of these preparations can have unfortunate consequences. It is important that medical professionals and the public at large are made aware of this.

In not all instances were the medicines taken on a regular basis. Non-compliance was found to occur in over one quarter of prescription medicines users, where the tendency of the participants was to decrease rather than exceed the indicated dose. Of note, there were no instances of an increase in dose with psychotropic preparations. This may be the true case but may also be an indication of the participants' unwillingness to disclose that they are indulging in such an activity. When considering those classes of drugs where dose was increased, the potential for increased side effects in the elderly is substantial. The excessive use of diuretics may lead to dehydration and electrolyte disturbances, abuse of anti-inflammatory agents may lead to increased potential for peptic ulceration, sodium and water retention and nephrotoxic effects, and the excessive intake of rauwolfia combinations may produce depression, hypotension and diuretic related adverse effects.

In contrast, the reduction in dose of preparations such as analgesics, laxatives, hypnotics, cold and 'flu and herbal preparations may be desirable or not counter-productive. However, undertreatment of conditions such as cardiac failure, depression, hypertension and diabetes is potentially serious and identifies an important component of non-compliance. The need to identify

and counsel the non-compliant elderly is highlighted by this failure to take the prescribed or recommended doses of agents such as diuretics, cardiac glycosides, antihypotensives and hypoglycaemics.

The type of health care utilised by the participant or the medicine supplier may have an influence on compliance. In addition to the greater tendency for the private sector supplier not to give dosage instructions on the container label, there is a higher incidence of non-compliance for those medicines received from the private sector -29.3% as opposed to 21.2% in the public sector. This may be an indication of the failure of the health care professionals to communicate not only with the patient but also with each other. It is not possible for the supplier of the medicine to re-inforce dosage instructions if they are not communicated to him by the originator of the prescription.

Over 30 classes of drugs were indicated as being prescribed or used on a "prn" basis. In many cases this may be an acceptable practice, but of note is the fact that 3 participants were using their psychoanaleptic (antidepressant) preparations, and one participant his anti-parkinsonian drug on an intermittant basis. For optimal efficacy these drugs should be used on a continual basis, and failure to do so indicates a lack of understanding of the preparation on the part of the prescriber or the patient.

Also of concern were the 34 instances where the participants used their non-narcotic analgesics on a continuous basis. This practice predisposes to increased adverse effects, in particular analgesic nephropathy with prolonged exposure. Tranquillisers

and sedative hypnotics, laxatives, broad and medium spectrum antibiotics, and preparations for common colds, nasal decongestants, antihistaminics were also used on a continuous basis. Such use of these medicines over extended periods is contra-indicated because of such problems as habituation, treatment failure and emergence of resistant organisms in the case of antibiotic abuse.

Further hazards in drug management of the elderly patient are introduced by the concomittant use of several preparations. Two fifths of the participants in this study were using 4 or more medicines (prescribed and self-prescribed) concurrently. Although this may not necessarily be an indication of the inappropriate use of medicines, it does indicate the need for careful review of the elderly patient's drug regimen before starting a new medicine. The higher per capita use of medicines for those elderly attending state health services may be an indicator of such a deficiency in the system. Patients attending state hospitals do not always see the same doctor at each visit and frequently the doctor must rely on the notes of other practitioners as pressure from high work loads may not permit him to take a more detailed history before prescribing a new preparation. As discussed in the previous section, the higher per capita use of medicines may help to explain why a higher non-compliance rate was also found to exist in the state health care services. Careful attention to these 2 points may help to reduce expenditure on medicines by the State through their more efficient use.

In addition to there being an increased per capita consumption rate with health care type, an increase in use of medicines was

noted with women. Why this should be the case has not been investigated in this study, but may be an indication of the different attitudes of the sexes towards health status. Women may be more inclined to admit that they are unwell and consequently may demand more medicines. More difficult to explain is the apparent lack of influence that age has on the per capita use of medicines. One possible explanation is that no increase in medicine use with age is observed because the study population selected is composed of "healthy" elderly and therefore their need for medicines remains unchanged despite their increasing years.

Both health care professionals and the elderly should be more aware of the heightened potential for adverse drug reactions with increased numbers of medicines (Williamson et al. 1980, Hutchinson et al 1986, Colt et al. 1989). This awareness becomes important in the light of the finding that 72% of medicines were used for over 1 year and thus may be forgotten or discounted on the grounds that since no untoward effects have been encountered, the medicine is safe and unlikely to be responsible for any adverse effects in the future. Patients who are well informed about their medicines should be better able to assist the doctors and other professionals in their health care management.

4.3 KNOWLEDGE SCORE

The knowledge that the elderly have with respect to their medicines has been investigated by others (Kiernan et al. 1981, Cartwright et al. 1988), but their questions have focussed primarily on the name and purpose of use of the medicines

whereas this study has attempted a more comprehensive assessment. Based on the literature, the knowledge tested in the present study was that considered essential for the safe use of medicines. The average knowledge score of 54.7% raises the question whether the elderly are adequately informed about their medicines. However, more than one explanation for this low score may be provided:

1. Doctors and pharmacists are not counselling their patients adequately
2. The doctors and pharmacists themselves are insufficiently informed about the medicines and thus are unable to give the patients more in-depth counselling
3. The elderly participants feel that they need not remember details such as interactions and side effects as it is the responsibility of the doctor to monitor such aspects of drug use
4. The criteria used for assessment of the participant's knowledge were over-strict
5. The cognitive function test employed to eliminate cognitively impaired participants was inadequate and the inclusion of cognitively deficient participants lowered the knowledge score

The detailed analysis of the knowledge score and its relationship with patient characteristics, health care type and medicine supplier, helps to address some of these points. Although the difference is small, the lower average knowledge scores of the state patients compared with private patients may be an indication that the high work load born by doctors and pharmacists in the public service prevents them from providing adequate counselling. It can be questioned whether extra counselling is provided at all, when it is noted that the average knowledge

score for medicines obtained from "elsewhere" is at least, as high as the score for medicines supplied by health care professionals. In the light of the findings of the present study, further research into the amount of counselling provided by health care professionals in both the state and private sectors needs to be undertaken.

Of equal concern is the possibility that the health care providers may have insufficient knowledge themselves to pass on to their patients. The frequent use of the term "Not indicated" to show that there are no specific instructions regarding a particular point in the Drug profile details supports this suggestion. Although the profiles are not intended as a complete reference work, they have been compiled from more than one reputable reference source and considerable time would have to be spent if these "missing" pieces of information were to be searched for in other reference works. Such time is not available to the health care professional in the field. The provision of more detailed information should be made part of the responsibility of researchers and manufacturers.

This study revealed that on average, just over half of the elderly made any attempt to "read up" about their medicines. This is a low proportion for a group of well educated individuals and may be evidence of the abdication by the patient of the responsibility for his health to the doctor or pharmacist. Such a conclusion may be supported further by the fact that most of the participants appeared to be satisfied with the amount of information given to them by their health care providers. On the other hand, failure of the participants to read up about their

medicines may be a sign of the shortage of easily understood medical literature such as patient package inserts available to the South African public. However, more detailed examination of the results shows that participants who purchased their medicines "elsewhere" and were thus entirely responsible for the choice of their medication were much more inclined to read up about their medicines. Participants who received their medicines from the state services were least inclined to read further. By their very nature state services tend to de-personalise the individual which may encourage the abdication of responsibility to the system. Once the outpatient returns home, then his medication and the way in which it is used becomes his responsibility. This point must be emphasised by more detailed counselling by the health care professionals and the use of patient package inserts.

On the other hand, possible reasons for the low average knowledge score may lie with the study design and not the participants and their health care providers. The first criticism may be that the participants' replies were too strictly "marked" during assessment. However, if the percent of correct answers given to the questions concerning drug name and purpose are compared against those obtained by Cartwright and Smith (1988) and by Kiernan et al. (1988) the figures compare favourably. Cartwright found that 76% of their participants knew the purpose of their medication and Kiernan found that the purpose was known for 59% of prescription medicines and 78% of self-prescribed medicines. The figure obtained for this study was 86.7% which may even indicate a tendency toward leniency. Similarly the participants in Kiernan's study could correctly

give the name for 44% of prescribed medicines and 72% of self-prescribed medicines. Name and strength were correctly quoted in 52% of cases in this study. As the population sample in this study was, in terms of patient characteristics and drug use patterns, very similar to the elderly of the USA and UK, it would not be unreasonable to assume that there would also be similarities in their knowledge of their medicines. Evidence of such similarities may reasonably be taken to indicate a lack of bias in terms of study design.

A further criticism may be that the cognitive function test used to exclude the cognitively impaired elderly from the study sample was not sufficiently powerful or improperly applied. Consequently marginally impaired elderly may have been included in the study which might have resulted in the lowering of the knowledge score. The significant decline in knowledge score with increasing age may be used as further evidence in this line of argument. Whilst the researcher concedes that a small amount of bias may have been introduced at this point because of the inclusion of 25 participants who did not complete the cognitive function test, work done by Macdonald et al. (1977) showed that poorly orientated patients can also benefit from detailed counselling. It is improbable that the inclusion of a few, marginally cognitively impaired elderly would reduce the average knowledge score by as much as 46% if the study population as a whole were adequately counselled.

4.3.1 IMPLICATIONS OF KNOWLEDGE SCORE RESULTS

One of the aims of this study was to ascertain if any relationship existed between knowledge scores and patient character-

istics and drug use patterns. Apart from a significant decline in knowledge with increasing age, no relationship between knowledge score and other patient characteristics was found. The absence of a relationship between knowledge score and social or education status is probably explicable on the basis that the study group was relatively homogenous. The lack of a relationship with factors such as gender, marital status, cohabitants and smoking and drinking habits is perhaps not unexpected although it may be partially due to a failure to identify any relationships because of the small numbers of individuals in each sub-group. Although at first sight, the inverse relationship between age and knowledge score may appear to be partially anticipated, it must be noted that no such significant relationship was found to exist when only self-prescribed medicines were considered. Although the exact reasons for these trends are not apparent from this study, two possible explanations could be put forward:

1. The very old patient has a different attitude from his younger counterparts towards his medicines. Fifty to sixty years ago, many of the medicines used today and their potential detrimental effects were not known and consequently the approach to the use of medicines was different.
2. The health care professionals have a different attitude toward the very old as compared with the young-old patients. It is a commonly held belief that old people tend to be forgetful and easily confused. Cartwright and Smith (1988) showed that the doctors in their study considered this to be the main reason why the elderly may be non-compliant. This belief may lead the doctor to assume that counselling of the very old patient may not be worth the effort as the patient will have forgotten everyth-

ing by the time he gets home. This reason for the failure by health care professionals to counsel adequately the very old patient may be supported by the fact that there was no significant decline in knowledge with age for self-prescribed medicines which are selected and used entirely at the discretion of the patient. Furthermore, this observation makes it less likely that a subtle decline in cognitive function with advancing age could account for the decline in knowledge scores. However, the decline in knowledge with increasing age may, in fact, be due to a combination of both the points discussed above and considerably more research work needs to be undertaken before this problem can be resolved.

An outstanding feature was the absence of a significant relationship between knowledge scores and drug use patterns. The study design did not allow for the identification of a statistically significant relationship between compliance and knowledge score as the knowledge score was dependent on the participant's own version of how the medicine was taken and alternative compliance checks such as tablet counts were not done. The fact that there were relatively few participants on large numbers of medicines might have precluded the demonstration of a relationship between medicines per capita and knowledge scores. The lack of any relationship between knowledge score and per capita consumption of medicines and between duration of use raises the question whether people tend to remember only the things that they perceive as being important. Information considered to be less significant needs to be re-inforced by the ongoing counselling of the patient with every prescription, new or repeated.

The breakdown of the knowledge score into the different questions and the percent of correct answers given for each question highlights certain areas where the lack of knowledge by the participants may compromise their ability to use their medicines safely. These areas have been identified as follows:

1. Participants were asked to state the maximum dose they could take of a medicine only if they were using it on a "prn" basis or if it were self-prescribed. A low average score rate was obtained in response to this question and thus could be an indication of the potential for accidental overdosing using such preparations.
2. The low overall score for the questions concerning interactions could also be an indication of the potential for the inadvertent generation of adverse drug events and possible treatment failure - both potentially serious and costly events.
3. The low score with respect to side effects may be evidence of the lack of communication between the participants and their health care providers. In many of the interviews, the participants stated that the medicines they were taking were quite safe and that their doctor would never prescribe a medicine which would produce side effects. In view of the large number of medicines with narrow therapeutic margins that is used by the elderly, this is a dangerous attitude to have. Patients should be made aware of the dangers that may accompany the use of their medication in order that they may identify any potential adverse events and act on them promptly.
4. Although in over half of the cases, the participants claimed to do further reading about their medicines, the number of correct answers scored for many of the questions was well below 50%. This highlights the need for more detailed, patient-

orientated literature. The tendency for a higher proportion of the younger participants to read up about their medicines, may be evidence that a changing public attitude has already generated a demand for such literature.

When the percent correct answers for each question is compared against health care type and supplier, some interesting points and questions which need further, more detailed investigation are raised:

1. State- or clinic-supplied participants had the lowest score for "Name and strength" of medicine. Two possible explanations for this are firstly that the tendency of the state to use the more complex generic name of the drug makes it difficult for the patient to say and remember the name of the preparation, and secondly that the way in which prescriptions are written and dispensed absolves the patient from the need to remember the name of his medicine.
2. Patients receiving care from the private sector are generally better informed on those points such as interactions and side effects which require more person to person counselling. This may, once again, be evidence of the high work load carried by professionals working in the public sector preventing them from spending sufficient time with each patient to ensure an adequate understanding of his medicine.
3. Although the difference was not large, the explanation why state- or clinic-supplied participants are less likely to read up about their medicines may be that the state practice of pre-packing the medicines prevents the patients from obtaining package inserts. The entire system may discourage the patient from becoming more involved in his health care. The finding that the

highest score for "Reading up" was obtained in those cases where the medicines were purchased "Elsewhere" may be a sign of the participant's greater involvement in his health care and his recognition of the need to be better informed.

4.4 LABEL SCORE

Once again, the paucity of information available on duration of use of medicines is apparant. It may be argued that in the case of prescribed medicines, duration of use may not be essential if the correct number of tablets for a course are supplied. However, it would then be necessary to state "Use until finished", but inspection of the prescribed medicine containers showed that this was not the case. Of particular concern is the fact that approximately one quarter of the names and an even higher percentage of the directions on the labels were not readily legible to the participants. This is especially true for medicines purchased "Elsewhere" and is an indication of the need for health care professionals and drug suppliers to pay more attention to the needs of the elderly patient.

The low score for labels showing both the name and the descriptive name or purpose of the medicine should serve as a warning to the health care professionals to be precise when discussing the patient's medication with him. When referring to a particular medicine, it would be adviseable to use both the true or proper name and the descriptive name to prevent confusion as to which preparation is being discussed.

Although no significant relationship was found to exist between knowledge score and label score, as in the case of the knowledge

score, the mean label score is far from ideal. On average the elderly use 3 medicines per capita and if the labels are not easily read, do not readily identify the preparation and its purpose and are non-specific in their directions, then the potential for confusion of the medicines and the perpetration of dangerous errors is heightened.

4.5 FINAL CONCLUSIONS AND RECOMMENDATIONS

This research work has been primarily investigative and exploratory in nature. Some attempt has been made to identify relationships between patient characteristics, drug use patterns and knowledge on the use of medicines but it would be premature to conclude that any such relationships identified hold true for the entire South African elderly population. As stated earlier, a very small and specific sector of the population has been researched and a very narrow picture has been presented.

What can be concluded from this research has been largely covered in the discussion of the results and the sections on the implications of the findings. As the drug use patterns identified are so similar to those of the American and British elderly, it may be reasonable to assume that problems encountered in the drug management of these elderly will also occur in the management of the white South African aged. For the most part elderly people are poorly informed about their medicines. In particular they lack knowledge about potential interactions and side effects and other important points of information such as how long to continue using the drugs and what the maximum dose is that may be taken within 24 hours. Health care professionals

and services appear to have a direct influence on drug use patterns and on the patients' understanding of their medicines. In addition, these two factors may be influenced by the attitude of the professionals toward the elderly and also by the attitude of the elderly toward their own health management and the medicines used by them. Generally, container labels are not recognised as important conveyers of information and many contain little or no instruction with respect to the correct and safe use of the medicine.

4.5.1 RECOMMENDATIONS

Arising from the findings of this study and the insight gained the following recommendations are made:

1. Communication skills of the health care professionals should be developed to ensure optimal patient medication knowledge. The low knowledge scores obtained in this study suggest that South African health care professionals are poor communicators of important information, not only verbally but also via the medicine container labels. Labels carry little information about the medicine and its use and many are illegible to the elderly patient. Doctors and pharmacists need to spend more time counselling their elderly patients about possible side effects and interactions and where possible re-enforcing this with written instruction, preferably on the container label. Particular attention needs to be paid to the legibility of these labels where the patient's eyesight may be poor, and counselling techniques should be adjusted accordingly.

2. During the education of health care professionals, greater emphasis should be placed on the special considerations involved

in medicating the elderly. This research has confirmed that a high percentage of the elderly use medicines and many use more than one concomittantly. Many of the prescribed medicines used are recognised as high-risk drugs for the elderly but even so many are routinely used on a long-term basis.

3. Frequent review of the elderly patient's drug profile, by both the doctor and the pharmacist involved must be encouraged and the need for the continued use of each preparation should be questioned. Doctors must be urged to investigate each case carefully and to replace treatment using psychotropic agents and other high-risk drugs with careful counselling and alternative treatments. Most importantly, health care professionals need to be educated out of any "age-ist" attitudes and pre-conceptions that they may have.

4. Similar research projects need to be undertaken in other parts of the country and amongst other population groups. The drug use patterns and drug education needs of all sectors of the South African elderly should be established before a definitive outline of their health care needs is compiled.

5. South African health care professionals attending to the needs of caucasian elderly should keep abreast of relevant literature emanating from the USA and Britain. This study has shown that the drug use patterns are all very similar, and for this reason, certain drug-orientated health care programmes found to be sucessful overseas may, with minimal ajustments, also prove to be sucessful here.

6. The elderly must be made more aware of a greater responsibility for their health. Where applicable, they must be encouraged to become more involved in their drug management programmes and ensure that they are well informed about their medicines.

7. Public awareness campaigns such as that set up by the 'National Council on Patient Education and Information' in America should be implemented in South Africa. Patient-directed literature about medicines and the benefits and risks associated with their use needs to be published. Once public awareness has been created in this manner, patients will demand more information from their health care professionals.

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APPENDIX A

QUESTIONNAIRE

FOR OFFICE USE

DD/MM/YYYY

NO:

1	2	0	1/3
0	6	5	

A C

1. What is your Date of Birth?.....

2. What sex are you? Male Female

3. What is your present marital status?

- Never married Divorced
- Widow/widower Married

4. Do you live alone? yes no

5. Who is living with you?

- Spouse Friend
- Other family Not applicable

6. Do you smoke tobacco at all? yes no

If you smoke, how many pipes/cigars/cigarettes do you smoke in 24 hours?

- between 1 and 19
- 20 to 29
- More than 30 NOT APPLICABLE

7. Do you drink any alcoholic beverages at all? yes no
On average, how often do you have a drink?

- 6 to 7 days per week
- 4 to 5 days per week
- 2 to 3 days per week
- Once a week
- less than once a month NOT APPLICABLE

8. To what level did you complete your education?

- No formal education
- Sub A, Sub B, Std 1
- Std 2, 3, 4
- Std 5, 6, 7
- Std 8, 9, 10
- Tertiary Education

To Page 2/...

FOR OFFICE USE

NO:

9. Are you fully retired? yes no

0

10. Before retirement what was a) your occupation?..... 1-5 01-20

b) your husband's occupation?..... 1-5 01-20

11. What is a) your occupation now?..... 1-5 01-20

b) your husband's occupation now?..... 1-5 01-20

12. What is your Approximate income per MONTH?

1/1 More than R3000

2/2 R2500 - R2999

3/3 R2000 - R2499

4/4 R1200 - R1999

5/5 R1000 - R1199

6/6 R600 - R999

7/7 R500 - R599

8/8 Less than R499

1-8 1-5

24

0

26

13. Do you receive a State Old Age Pension? yes no

14. Do you have a regular GP? yes no
When did you last consult him/her?

1 Within the last month

2 Within the last 2 to 6 months

3 More than 6 months ago. 0 Not APPLICABLE

0 1-4

29

15. What is his /her name?..... (000 to 999)

16. Do you ever go to any of the day clinics or state hospitals for treatment or check-ups? yes no
When did you last visit one of these?

1 Within the last month

2 Within the last 2 to 6 months

3 More than 6 months ago 0 Not APPLICABLE

0 1-4

30

17. Which one do you go to more often?..... (000 - 999)

To Page 3...

NO: _____

8. Where do you usually get your medicines:

1 At a pharmacy (chemist)

2 From your doctor

3 From the clinic

4 Elsewhere (Specify) 001 to 999

1-4				
3				
4	0			
42				

9. Do you belong to a medical aid? yes

no

0. What is the name of your medical aid? 000 - 999

APPENDIX B**CODING OF MRC SHEET: QUESTIONNAIRE**

ROW ONE - Participant particulars

COLUMNS	DETAILS	NUMBERS
1 to 3	Participant Number	001 to 999
4 to 6	Participant age (Q.Q1)	065 to 120
7	Participant age group (Q.Q1)	1 to 8
8	Participant sex M = 1 F = 0 (Q.Q2)	1 or 0
9	Marital status (Q.Q3)	1 to 4
10	Co-habitants (Q.Q4) y/n	1 or 0
11	" (Q.Q5)	0 to 3
12	Smoking habits (Q.Q6) y/n	1 or 0
13	" - Type of smoker (Q.Q6)	0 to 3
14	Drinking habits (Q.Q7) y/n	1 or 0
15	" - Type of drinker (Q.Q7)	0 to 5
16	Level of education (Q.Q8)	1 to 6
17	Fully retired (Q.Q9) y/n	1 or 0
18	Occupational Category before retirement (Q.Q10)	1 to 5
19 & 20	Occupational Group " " (Q.Q10)	1 to 20
21	Occupational Category after retirement (Q.Q11)	1 to 5
22 & 23	Occupational Group " " (Q.Q11)	1 to 20
24	Monthly Income Group (Q.Q12)	1 to 8
25	Occupational Group based on Income (Q.Q12)	1 to 5
26	Recipient of State Old age pension (Q.Q13) y/n	1 or 0
27	General Practitioner (Q.Q14) y/n	1 or 0
28	Period since last consultation (Q.Q14)	0 to 3
29 to 31	G.P. number (according to list) (Q.Q15)	001 to 999
32	State Care (Q.Q16) y/n	1 or 0
33	Period since last consultation (Q.Q16)	0 to 3
34 to 36	Clinic number (according to list) (Q.Q17)	001 to 999
37	Source of supply of medicines (Q.Q18)	1 to 4
38 to 40	Source number (according to list) (Q.Q18)	001 to 999
41	Medical aid (Q.Q19) y/n	1 or 0
42 to 44	Medical aid No. (according to list) (Q.Q20)	001 to 999
45	Has used prescribed drugs in past 2 weeks (IS.Q1)	1 or 0
46	Not remembered prescribed drugs (IS.Q19)	1 or 0
47 & 48	No. of not remembered prescribed drugs (IS.Q20)	00 to 99
49	Self prescribed medicines (IS.Q22) y/n	1 or 0
50 & 51	Number of Self prescribed medicines	01 to 10
52 & 53	Source of educational material (list) (IS.Q24)	01 to 99
54	Satisfaction wrt knowledge of medicines (IS.Q25)	1 or 0
55 & 56	Cognitive Function Score (IS.Q26)	0 to 10
57	Short Term Memory score (IS.Q26)	0 to 3
58 to 59	Visual Acuity Score (IS.Q27)	006 to 120

INTERVIEW SCHEDULE - CODING

1. Within the past 2 weeks have you used any medicines prescribed to you by a doctor? **(1)**
2. Can you name them for me? **(3,1)**
3. Can you tell me what strength of Drug 1 (2 etc) you are using?
applicable / not applicable **(1)**
4. Can you tell me what you are using Drug 1 (2,3 etc) for? **(2)**
5. How often do you take a dose of this medicine?
prn / not prn **(0)**
 4 times a day **(03)** 4 to 6 times a week **(01)**
 3 times a day **(04)** 2 to 3 times a week **(03)**
 7 times & more per day **(01)** twice daily **(05)** once a week **(01)**
 6 times a day **(02)** once daily **(06)** less than once a week **(0)**
6. Can you tell me what is the maximum no. of doses that you may take in 24hrs? **(3)** **(2)** **(1)**
7. How much do you take each time? - dose incr / decr / unchanged / not indicated **(0)**
8. How do you take it?
 Do you take it with food **(1)** or on an empty stomach **(2)** or either **(3)**
 With water **(1)** or with milk or any other type of drink **(2)** or either **(3)**
 or without any food or liquid **(0)**
 Do you swallow it whole **(1)** or suck it **(2)**
 or chew it **(3)** or take it crushed & sprinkled on food **(4)**
 or dissolved in water or juice? **(5)**
9. How long have you been using this medicine?
(01) 1 to 5 days **(04)** 1 to 6 months **(06)** 1 to 5 years
(02) 6 to 14 days **(05)** 7 to 11 months **(07)** 6 to 10 years
(03) 14 days to 1 month **(08)** 11 to 15 years
(09) 16 to 20 years
(10) more than 20 years

30 10. Do you know, what is the recommended length of time for which you should carry on using this medicine?

31 11. Have you been cautioned about other medicines that you should be careful about taking while you are using this medicine? y | n

Can you name them for me?

40 12. Why should you be careful about these medicines?
applicable / not applicable

42 13. Have you been cautioned to be careful about eating any particular foods or non-alcoholic drinks or beverages while you are using this medicine. y | n

What are they?

43 14. Why should you be careful about these foods?
applicable / not applicable

45 15. Have you been cautioned to be careful for any reason about consuming alcohol while you are taking this medicine? y | n

46 16. Why should you be careful about consuming alcohol with this medicine?
applicable / not applicable

48 17. Do you know of any side effects or unwanted effects that may arise out of the use of this medicine? y | n

Can you tell me what these side effects may be?

49 18. What would you do if you experienced any of these side effects?

50 19. Are there any other medicines prescribed to you in the past 2 weeks that you cannot remember the names of? y | n

51 20. How many are there?

21. Can you tell me what each one is used for?

(Repeat Q's 3 to 18)

52 22. Within the past 2 weeks have you used any medicines that were NOT prescribed to you by a doctor? y | n

(Repeat Q's 2 to 21)

53 23. Do you ever "Read up" about your medicines to try to find out more information about them? y | n

54 24. Where do you normally get this information?

INTERVIEW SCHEDULE

25. Do you feel that you are sufficiently informed about your medicines to enable you to use them safely? y/n

26. Cognitive function and short-term memory tests

27. Visual acuity test.

LABEL SCORE

1. Can you read me the name on the label? y/n

2. Can you read me the directions on the label? y/n

3. Name of Drug a) Trade/Generic and strength..... (1)

b) Descriptive name (eg Heart Tabs)..... (1)

4. Directions Quantity..... 1

Frequency..... 1

Manner..... 1

Duration..... 1

5. Patient Name..... 1

6. Dispenser's name..... 1

1-3 60 Auxilliary labels y/n

1 2 3 4
Handwritten/Machine written/Printed/Hospital

Name of dispenser & Type of Health care service

Private phy = 1

Private Doctor = 2

State = 3

Elsewhere = 4

APPENDIX E

CODING OF MRC SHEET: INTERVIEW SCHEDULE

ROWS TWO TO TWENTY - Drug particulars

COLUMN	DETAILS	NUMBERS
1 to 3	Participant Number	001 to 999
DRUG CODE-NAME		
4 & 5	Drug Classification Category	01 to 34
6	BLANK	
7 & 8	Drug Classification Subdivision 1.	01 to 12
9	BLANK	
10 & 11	Drug Classification Subdivision 2	01 to 10
12 to 16	Drug ID No. (As per compiled list)	00001 to 30000
17	Prescribed/Self-prescribed/Not recently used	1 to 3
18 & 19	Drug Number per participant	01 to 99
KNOWLEDGE SCORE		
20	Knowledge Score 1 (IS.Q2)	2, 1 or 0
21	K S 1 (IS.Q3)	1 or 0
22	Applicable/Not applicable wrt (IS.Q3 & 2)	1 or 0
23	K S 2 (IS.Q4)	2 or 0
24	Frequency of use (IS.Q5) Prn use/Not prn use	1 or 0
25 & 26	" " " (IS.Q5) Frequency category	01 to 10
27	K S 3 (IS.Q5)	1 or 0
28	K S 4 (IS.Q6)	1 or 0
29	Dose Incr./Decr./Unchanged/Not indicated	3 to 0
30	K S 5 (IS.Q7)	2 or 0
31 & 32	Manner of use (IS.Q8)	10 to 22
33	" " " "	1 to 5
34	K S 6 (IS.Q8)	2, 1 or 0
35 & 36	Duration of use (IS.Q9)	01 to 10
37	K S 7 (IS.Q9)	1 or 0
38	K S 8 (IS.Q10)	1 or 0
39	K S 9 (IS.Q11)	1 or 0
40	K S 10 (IS.Q12)	1 or 0
41	Applicable/not applicable wrt KS 9 & 10	1 or 0
42	K S 11 (IS.Q13)	1 or 0
43	K S 12 (IS.Q14)	1 or 0
44	Applicable/Not applicable wrt KS 11 & 12	1 or 0
45	K S 13 (IS.Q15)	1 or 0
46	K S 14 (IS.Q16)	1 or 0
47	Applicable/not applicable wrt KS 13 & 14	1 or 0
48	K S 15 (IS.Q17)	1 or 0
49	K S 18 (IS.Q18)	1 or 0
50	K S 20 (IS.Q23)	1 or 0

CODING OF MRC SHEET: INTERVIEW SCHEDULE Contd.

LABEL SCORE

51	Label	Score	1		1	or	0
52	L	S	2		1	or	0
53	L	S	3		2,	1	or 0
54	L	S	4	Quantity	1	or	0
55				Frequency	1	or	0
56				Manner	1	or	0
57				Duration	1	or	0
58	L	S	5		1	or	0
59	L	S	6		1	or	0
60	Auxilliary Label	yn			1	or	0
61	Handwritten/Typewriter	Printer/	Printed		1	to	3
62	Health care type				1	to	4

NOTES:

According to the Medicines and Related Substances Control Act, 1965(Act 101 of 1965) Amendment 21 Oct 1983.

Prescribed = 1; Self prescribed = 2; Not recently used(Within last 2 weeks) = 3.

IS.Qy = Interview Schedule, Question y

KS = Knowledge Score

Applicable = 1; Not applicable = 0.

In cases where a question (set of questions) is marked not applicable, the overall KS required for full marks shall be reduced by the same number of score points as allotted to the question(s) under consideration.

Prn use = 1; Not Prn use = 0

Frequency category numbered according to IS.

Dose Change: Increased = 2; Decreased = 1; Unchanged = 0

Manner of use numbered according to IS.

Duration of use numbered according to IS.

Health Care type: Private GP = 1; Pharmacy = 2; Clinic = 3; Other = 4

APPENDIX F

COGNITIVE FUNCTION TEST

THE ABBREVIATED MENTAL TEST: *
INFORMATION TEST

	Score
Age	1
Time (Nearest Hour)	1
Year	1
Name of Place	1
Recognition of two persons	1
Birthday (Date and month)	1
Date of World War 2	1
The State President's name	1
Counting 20-1 backwards	1
Address	1
Short term recall- 3 objects (2/3)	3

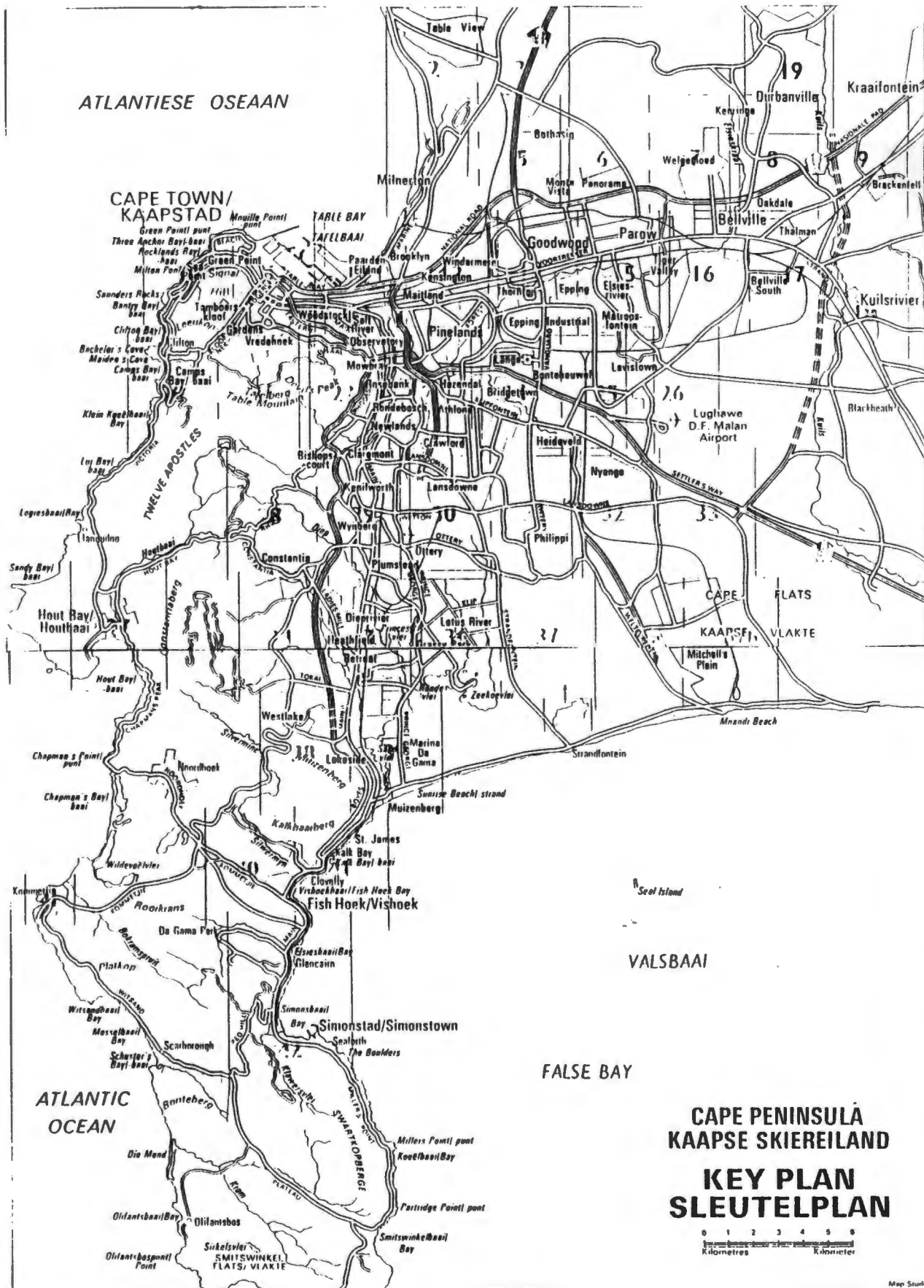
Total Score	-----

*From Hodkinson, 1972 and modified for the South African population as by the Geriatric Unit, U.C.T.

A score of below 7 on this test is considered to be indicative of poor cognitive function.

APPENDIX G

MAP* OF CAPE TOWN SHOWING AREAS VISITED



- Area Visited
 *Based upon "Street Guide to Cape Town and Environs" 3rd Edition. MAP STUDIO

APPENDIX H

DRUG PROFILES*

These profiles are not intended to be a complete reference work. The greater part of these profiles has been compiled out of information available from the Package Inserts as required by the South African Medicines Control Council, the United States Pharmacopea (1988), and the Extra Pharmacopea (Martindale, 28th Edn). The information on vitamins and homeopathic medicines has been supplemented by information from "Vitamins in Medicine" (Barker and Bender, 1980), "The Vitamin Bible" (Mindell, 1988) and "Materia Medica with Repertory" (Boericke, 9th Edn).

The pharmacological classification is taken directly from that indicated on the Package Insert. Homeopathic and herbal preparations which have no classification indicated on their package inserts or labels are all classified under category 34 - "Other", irrespective of their indications.

In the case of medicines which are obtainable only on prescription, the only drug interactions which are listed are those occurring with medicines which may be purchased over the counter. For those medicines which may be purchased over the counter, all possible drug interactions are listed.

The term "Not Indicated" is used to show that the reference works used did not have any information on the subject. It is acknowledged that the information required may be available in other works not used in the compilation of these profiles.

* In order to reduce the bulkiness of this volume, only the index and the first 10 profiles have been included in this appendix.

ACEBUTOLOL HYDROCHLORIDE

<u>NAME</u>	<u>STRENGTH</u>	<u>CODE</u>
Sectral™	100mg	
	200mg	
	400mg	05/02/0000232

INDICATIONS: Angina pectoris, cardiac dysrhythmias, mild to moderate hypertension.

RECOMMENDED DOSE RANGE: 300 - 900mg daily in divided doses

MAXIMUM DOSE: 1200mg per day

MANNER OF USE: At breakfast

DURATION OF USE: Not indicated

INTERACTIONS MEDICINES: NSAID - decreased antihypertensive effects because of increased fluid retention.

Sympathomimetics - increased hypertension and possible heart-block

Xanthines - mutual inhibition

Phenothiazines - increased plasma levels of each medicine

INTERACTIONS FOODS/NON-ALCOHOLIC BEVERAGES: Not indicated

INTERACTIONS ALCOHOL: Not indicated

SIDE EFFECTS: Bronchoconstriction, bradycardia, congestive heart failure, sexual impotence, hypoglycaemia, skeletal muscle weakness and GIT disturbances

Vague fatigue and malaise, sleeplessness, vivid dreams and nightmares, cold hands and feet.

ACTIFED[®]

<u>NAME</u>	<u>STRENGTH</u>	<u>CODE</u>
Triprolidine Hydrochloride	1,25mg	
Pseudoephedrine Hydrochloride	30.0 mg	

05/08/0000145

INDICATIONS: Relief of non-specific nasal congestion and nasal congestion and nasal allergic conditions.
Decongestion of the respiratory tract including sinuses and antra and eustachian tubes.
Treatment of aerotitis.

RECOMMENDED DOSE RANGE: One to two tablets 3 times a day

MAXIMUM DOSE: 8 tablets per 24 hours

MANNER OF USE: With or after food to reduce gastric irritation

DURATION OF USE: Not indicated

INTERACTIONS MEDICINES: Triprolidine: Antimuscarinics - increased antimuscarinic side effects
MAOI - increased cardiac stimulation and increased antimuscarinic activity of the antihistamine
Pseudoephedrine: Antihypertensive - increased blood pressure
Beta-adrenergic blocking agents - increased blood pressure and bradycardia with possible heart block
CNS stimulants - increased CNS stimulation
Nitrates - decreased anti-anginal effects
Levodopa - increased chance of arrhythmia
Rauwolfia alkaloids - decreased efficacy of pseudoephedrine

INTERACTIONS FOODS/NON-ALCOHOLIC BEVERAGES: Not indicated

INTERACTIONS ALCOHOL: Increased CNS depression

SIDE EFFECTS: Drowsiness, sleep disturbances and hallucinations
Increased blood pressure in hypertensives
Acute Overdose leads to drowsiness, weakness and incoordination, difficulty urinating, respiratory depression, hypotension or hypertension, agitation, irritability, convulsions, palpitations and tachycardia.

ADELPHANE-ESIDREX™

<u>NAME</u>	<u>STRENGTH</u>	<u>CODE</u>
Reserpine	0,1mg	
Dihydralazine Sulphate	10,0mg	
Hydrochlorothiazide	10,0mg	

07/01/02/00080

INDICATIONS: Antihypertensive

RECOMMENDED DOSE RANGE: One to 2 tablets daily

MAXIMUM DOSE: Two tablets 3 times a day for short periods of time

MANNER OF USE: With milk or food to reduce gastric irritation

DURATION OF USE: Not indicated

INTERACTIONS MEDICINES: Sympathomimetics - increased blood pressure

Antihistamines - increased CNS depression

Sodium bicarbonate - increased chance of developing hypochloraemic alkalosis

High doses of calcium containing medicines or supplements - increased chance of developing hypercalcaemia

NSAID - increased fluid retention

INTERACTIONS FOODS/NON-ALCOHOLIC BEVERAGES: Advised to eat low fat diets with lots of fruit

INTERACTIONS ALCOHOL: Increased CNS depression

SIDE EFFECTS: Tiredness and nasal congestion, depression

ALDORETIC[®]

<u>NAME</u>	<u>STRENGTH</u>	<u>CODE</u>
Methyl dopa	250 mg	
Hydrochlorothiazide	25 mg	
Amiloride Hydrochloride	2,5mg	

07/01/03/00069

INDICATIONS: Hypertension

RECOMMENDED DOSE RANGE: One tablet daily or twice daily

MAXIMUM DOSE: Two tablets daily

MANNER OF USE: With food or milk to reduce gastric irritation

INTERACTIONS MEDICINES: Sympathomimetics - increased blood pressure

CNS depressants - increased CNS depression

NSAID - decreased efficacy of Aldoretic[®]

INTERACTIONS FOODS/NON-ALCOHOLIC BEVERAGES: Not indicated

INTERACTIONS ALCOHOL: Increased CNS depression and increased orthostatic hypotension

SIDE EFFECTS: Orthostatic hypotension

Drowsiness, depression, anxiety, trouble sleeping and nightmares, stuffy nose, bradycardia, decreased sexual ability and gynaecomastia, loss of appetite, nausea, vomiting and diarrhoea or constipation, rash, dry mouth, jaundice

ALLERID[®]

<u>NAME</u>	<u>STRENGTH</u>	<u>CODE</u>
Phenylpropanolamine Hydrochloride	50.0 mg	
Chlorpheniramine maleate	1.0 mg	
Pheniramine maleate	12.5 mg	
Belladonna alkaloids	0.16mg	

05/08/0000206

INDICATIONS: Hayfever with nasal congestion, itchy, watery eyes, sneezing, cough and sinus congestion

RECOMMENDED DOSE RANGE: One capsule every 12 hours

MAXIMUM DOSE: Not more than 3 capsules every 24 hours

MANNER OF USE: Not indicated

DURATION OF USE: Do not use frequently or over prolonged periods

INTERACTIONS MEDICINES: Other anticholinergics - increased antimuscarinic side effects

Methyl dopa, reserpine and guanethidine - decreased antihypertensive control

Digitalis - heart arrhythmias

Xanthines - increased irritability and nervousness

General anaesthetics

INTERACTIONS FOODS/NON-ALCOHOLIC BEVERAGES: Excessive intake of cola drinks, coffee and Lucozade[®] lead to increased nervousness

INTERACTIONS ALCOHOL: Increased CNS depression

SIDE EFFECTS: CNS sedation with drowsiness, loss of concentration, lassitude, dizziness, hypotension, muscular weakness, inco-ordination and mental confusion

GIT disturbances

Headache, blurred vision, mood elevation or depression, irritability, nightmares, anorexia, difficult urination, dry mouth, tight chest, tingling, heavy or weak hands.

Insomnia, nervousness, tachycardia, tremors and muscle twitching and convulsions

Allergic reactions

Blood disorders

ACTAN[®] (ACTAL)

<u>NAME</u>	<u>STRENGTH</u>	<u>CODE</u>
Alexitol sodium	400mg	11/04/0100127

INDICATIONS: Hyperacidity, peptic ulceration, heartburn of pregnancy

RECOMMENDED DOSE RANGE:

Hyperacidity - 1 to 2 tabs as needed and half to 1 hour after meals

Peptic ulceration - 2 to 4 tablets every 3 to 4 hours

Pregnancy - 1 to 2 tablets on an empty stomach or half an hour after meals

MAXIMUM DOSE: Not indicated

MANNER OF USE: Sucked or swallowed with a little water or milk

DURATION OF USE: Not advised to take continuously for extended periods

INTERACTIONS MEDICINES: (As for aluminium hydroxide) Aluminium hydroxide may affect the absorption of the following: anticholinergics, barbiturates, digoxin, quinine, quinidine, warfarin, tetracyclines, fat soluble vitamins, phenytoin, sucralfate, ketoconazole, and cimetadine.

INTERACTIONS FOODS/NON-ALCOHOLIC BEVERAGES: Not indicated

INTERACTIONS ALCOHOL: Not indicated

SIDE EFFECTS: Constipation with impaction at high doses, phosphate depletion with long term use leading to osteomalacia and osteoporosis. Phosphate depletion leads to feelings of discomfort, loss of appetite, muscle weakness or unusual loss of weight

Chalky taste, stomach cramps, nausea and vomiting, speckling or whitish discolouration of stools.

ALFACALCIDOL (1 α -hydroxyvitamin D₃)

<u>NAME</u>	<u>STRENGTH</u>	<u>CODE</u>
One-Alpha™	0,25 μ g	22/01/0400063
	1,0 μ g	

INDICATIONS: Renal bone disease, hypoparathyroidism, secondary hyperparathyroidism, hypophosphataemic vitamin D resistant rickets and osteomalacia, nutritional and malabsorptive rickets and osteomalacia

RECOMMENDED DOSE RANGE: One microgram per day

MAXIMUM DOSE: Depending on reasons for use up to 3 μ g per day

MANNER OF USE: Not indicated

DURATION OF USE: Depends on weekly and monthly monitoring of calcium blood levels

INTERACTIONS MEDICINES: Unsupervised use of calcium and vitamin D supplements

INTERACTIONS FOODS/NON-ALCOHOLIC BEVERAGES: Not indicated

INTERACTIONS ALCOHOL: Not indicated

SIDE EFFECTS: Vitamin D intoxication and hypercalcaemia initially indicated by weakness, fatigue, somnolence, headache, anorexia, nausea, vomiting and diarrhoea and pruritis. Agitation, apprehension, pain in extremities, paralytic ileus, abdominal pain and rarely overt psychosis.

ALLOPURINOL

<u>NAME</u>	<u>STRENGTH</u>	<u>CODE</u>
Zyloprim [®] , Puricos [®]	100 mg	03/03/0000101
	300 mg	03/03/0000043

INDICATIONS: Gouty arthritis, hyperuricaemia, nephropathy, renal calculi (uric acid and calcium oxalate), various other states

RECOMMENDED DOSE RANGE: 100mg to 900mg per day in titrated doses

MAXIMUM DOSE: 2 to 10 mg per kilogram body mass per day

MANNER OF USE: With food

DURATION OF USE: Not indicated

INTERACTIONS MEDICINES: High doses of salicylates and other uriscourics - decreased allopurinol activity
Urinary acidifiers (ammonium chloride, ascorbic acid, potassium or sodium phosphate) - increased xanthine stone formation
Xanthines (aminophylline, theophylline) - doses of allopurinol greater than 600mg per day leads to an elevation of theophylline levels

INTERACTIONS FOODS/NON-ALCOHOLIC BEVERAGES: Purine rich foods eg livers

INTERACTIONS ALCOHOL: Increases uric acid levels leading to decreased allopurinol efficacy

SIDE EFFECTS: Skin rash, hives or itching
Beeding sores on lips, blood in urine, chills and fever, difficult and painful urination, red, thickened burning or peeling skin, sore throat and fever, swelling face, feet and lower legs, yellowing skin.
Rarely: Loosening fingernails, numbness, tingling, pain, or weakness of hands or feet, pain of lower back, unexplained nose bleeds, headache, indigestion, hair loss and stomach pain.

ALUMINIUM HYDROXIDE

INDICATIONS: Antacid used to give symptomatic relief in gastric and duodenal ulcer and reflux oesophagitis
Treatment of hyperchlorhydria

RECOMMENDED DOSE RANGE: 0.5g to 1g as required

MAXIMUM DOSE: Not indicated

MANNER OF USE: Dispersed in water or milk. Tablets must be chewed

DURATION OF USE: Chronic use may lead to osteomalacia, particularly in patients low in phosphorous

INTERACTIONS MEDICINES: Concomittant use decreases the absorption of anticholinergics, barbiturates, digoxin, quinine, quinidine, warfarin, tetracyclines, some vitamins, cimetadine and ranitidine, oral iron preparations, isoniazid, ketoconazole, chlorpromazine, phenytoin, sodium fluoride, oral phosphates, and sucralfate

Lowered gastric pH may lead to the too rapid dissolution of the enteric coating of tablets such as bisacodyl tablets and result in gastric irritation

INTERACTIONS FOODS/NON-ALCOHOLIC BEVERAGES: Not indicated

INTERACTIONS ALCOHOL: Not indicated

SIDE EFFECTS: Phosphate depletion with resultant increase in excretion of calcium and osteomalacia

Large doses may lead to intestinal obstruction

Nausea, vomiting and constipation

AMBUPHYLLINE

A theophylline derivative similar to aminophylline

INDICATIONS: Bronchospasm

RECOMMENDED DOSE RANGE: 60mg to 120mg

MAXIMUM DOSE: Not indicated

MANNER OF USE: Not indicated

DURATION OF USE: Not indicated

INTERACTIONS MEDICINES: As for theophylline

INTERACTIONS FOODS/NON-ALCOHOLIC BEVERAGES: Foods high in xanthines such as coffee, chocolate, tea, cola, may lead to exacerbation of side effects if consumed in large amounts

INTERACTIONS ALCOHOL: Not indicated

SIDE EFFECTS: Nausea and vomiting and gastric bleeding, visual disorders, insomnia, headache, anxiety, confusion, restlessness, hyperventilation, vertigo and palpitations

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