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STUDY ON DRUG CONSUMPTION
BY THE INSURED POPULATION

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Introduction

From the very earliest days, the presence of sickness and disease has been a matter of concern to humanity. History records a wide variety of beliefs and practices connected with the healing of ailments and the maintaining of health.

Primitive peoples sought to solve these problems by magical practices. As knowledge grew, these practices were superseded by others based on plant substances which were found to have curative properties. Medicine developed and gradually became established as a profession. As the sciences of biology and chemistry progressed, medicinal plants were made the subject of analysis and processing, giving rise to manufactured drugs.

These principles became widely employed in European society and the drugs produced developed into extensively marketed items of merchandise. (1)

The rise of the Industrial Revolution brought about a greater need for drugs and also promoted their diversification.

The large-scale wars of the period and the advent, in the 20th century, of the fully industrial society led to a change in the living patterns of the population with the result that new needs or ones not previously perceived arose.

The chemical and pharmaceutical sectors developed rapidly, spurred by the requirements generated by World War II

and the contributions of the growing petrochemicals industry to the synthesis of drugs. (2)

As the products of the industrial laboratories came onto the market, the medical profession was quick to replace the traditional medications by the new products of science.

Pharmacies became sales outlets for the goods produced by industry. The process observed in the developed countries is being repeated, on a greater or lesser scale, in the less developed ones, with the natural differences deriving from the variations in drug prescription and consumption patterns characteristic of different societies.

To begin with, the major pharmaceutical companies in the industrial countries exported their surpluses to the developing countries. Later they set up establishments in them, bringing in production, marketing and distribution techniques and adapting these to suit the societies concerned and as a result introducing new consumption-oriented values into these societies.

This brought about a radical change in medical practice, in that the medication became the dominating factor.

However, the outcome was not any trend toward stabilization of the consumption of drugs; studies made in various European countries revealed higher drug consumption that bore no relation to morbidity. (3)

Consumption takes place through all possible channels: legalized medical practice and also informal and empirical practices, especially selftreatment.

Studies in Colombia and Argentina show that 60-70% of all medication consumption does not derive from a physician's prescription (4), while studies made in the USA indicate that about 75% of all visits to a physician conclude with a prescription for medication . (5) Other studies reveal that women consume more medication than men and that people in urban areas take more than those in rural areas, while married people take more than singles and consumption based on selftreatment is greater among lower-income groups. (4)

Study of the psycho-sociocultural variables that affect drug consumption in Costa Rica should enable us to set up predictive models for various consumption patterns, for different social groups, provided care is taken not to fall into what Boltanski refers to as "cultural idealism" (6); accordingly, the economic determinants which sustain the structure which produces a particular pattern of social behavior must be included in the analysis.

In Costa Rica, institutionalized medicine was introduced with the establishment of the Costa Rican Social Insurance Fund (CRSIF), 33 years ago. The development of social security in the country has produced a series of changes in the form of interaction between physicians and other health

professionals and the Fund's users, between the economic interests of the groups connected with the production and sale of drugs and the needs of the CRSIF in this field, and between the forms of the practice of institutional medicine and the private practice medicine.

This study is intended to be the first of a series of studies designed to provide data on the characteristics which condition the prescribing and consumption of drugs in Costa Rica, within the context of institutionalized medicine. We accordingly considered it appropriate to gather data on the following aspects:

1. Certain characteristics descriptive of the socio-economic condition of the consumers.
2. Identification of certain reasons which explain the inadequate consumption of the drugs prescribed.
3. The incidence of certain aspects of the doctor-patient relationship on drug consumption, and
4. The drugs most frequently prescribed by CRSIF physicians.

For further details on the variables studied, the questionnaire used is included as Appendix 1.

Methodology

For the purposes of the study, a sample of 616 patients was selected from an insured population which consults a physician, on average, 14,255 times a month. This population

was selected from an area covering the cantons of Goicoechea, Moravia and Coronado, which is served by the Dr. Ricardo Jiménez Núñez Suburban Clinic. The population interviewed was selected from the 12,322 general medicine, pediatric and psychiatric consultations made in a month, i.e. 84.5% of the total number; for the purposes of the study, it was assumed that each visit generates one prescription. The breakdown of the examinations over the above-mentioned specialties was: general medicine 74%, pediatrics 24% and psychiatry 2%. Of the 616 interviews, which represented 5% of the population studied, 140 were not conducted for various reasons: (a) wrong address given; (b) patient not at home; (3) patient refused to see interviewer, and (d) patient was hospitalized at time. It should be noted that the proposed sample was 5% of the total monthly examinations, and that it was reduced by 1% on account of the reasons stated.

A coded questionnaire was used for gathering the data; all the drugs were identified according to the CRSIF's code for pharmaceutical specialties and a team of eight survey-takers was trained to do the following field work:

1. In the Clinic: one survey-taker was responsible for selecting, randomly, the patients who had come for examinations in any of the three specialties concerned and

sending them into a separate room where four colleagues took down all their personal data plus the type and number of drugs prescribed, and measured the quantity of drugs specified.

At the same time, a physician determined the possible date of the house visit on the basis of the diagnosis or type of ailment and the quantity and type of drugs the patient took with him, arranging that the visit programmed should fall half-way through the treatment.

2. In the home: the survey-takers measured the quantity of drugs remaining at the time of their visit, identified them by type and calculated the percentages which had been consumed by the patients. At the same time they completed the data about those who had taken less than 90% of the drugs prescribed for them.

The Faculty of Medicine furnished the personnel who prepared the study.

The Costa Rican Social Insurance Fund financed part of the study and provided facilities for use of its premises.

The computer program was prepared in the School of Mathematics and processed in the University of Costa Rica's Data Processing Center.

Results

The data obtained will be presented following the layout of the forms:

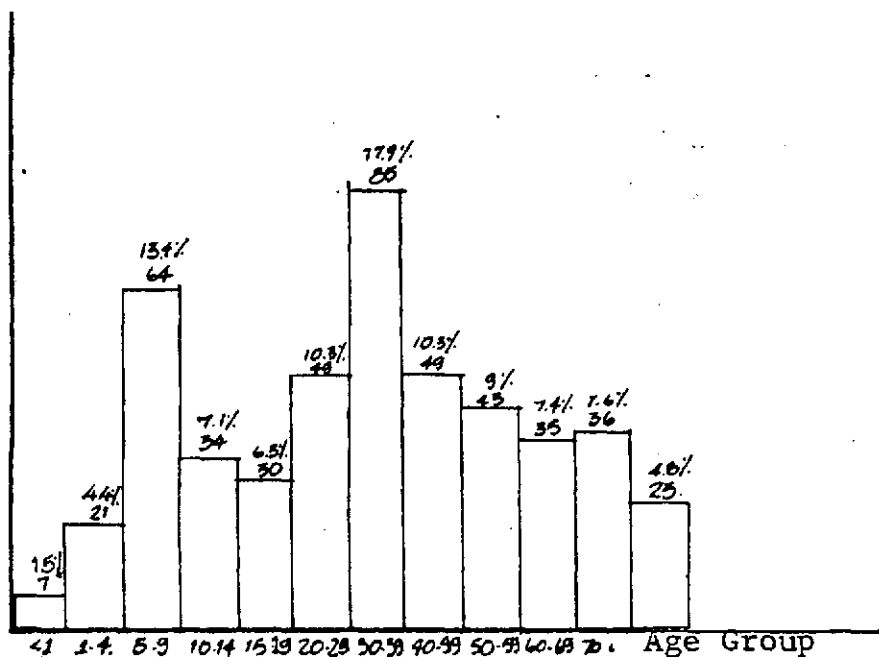
1. General descriptive aspects

Age composition: The population studied showed the following breakdown by age, as summarized in Table 1 and Figure 1.

TABLE 1
Breakdown by Age Group

Under 1 month	7	1.5	1.5
1 - 12 months	21	4.4	5.9
1 - 4 years	64	13.4	19.3
5 - 9 years	34	7.1	26.5
10 - 14 years	30	6.3	32.3
15 - 19 years	49	10.3	43.1
20 - 29 years	85	17.9	60.9
30 - 39 years	49	10.3	71.2
40 - 49 years	43	9.0	80.3
50 - 59 years	35	7.4	87.6
60 - 69 years	36	7.6	95.2
70 or more years	23	4.8	100.0
TOTAL	476	100.0	100.0

FIGURE 1
Distribution by Age Group



Sex: There is a marked predominance of consultations by insured females; the 1973 census showed a 48% male/52% female breakdown for the population of Goicoechea. 66% of visits to physicians were by women.

Civil status: Table 2, giving the breakdown by civil status, includes the children; this should be taken into account in considering the much higher proportion of visits shown for singles.

TABLE 2

Distribution According to Civil Status

<u>Civil Status</u>	<u>No.</u>	<u>%</u>	<u>Cumulative %</u>
Single	231	48.5	48.5
Married	189	39.7	88.2
Widow(er)	23	4.8	93.1
Divorced	3	0.6	93.7
Other	30	6.3	100
TOTAL	476	100.0	

The 1973 census data show for Goicoechea: Singles 64.0%, Married 29.3%, Widow(er)s 2.5%, Divorced 0.5%, and others 3.7%. It can be concluded that married persons and widow(er)s see physicians relatively more often.

Type of insured person: The breakdown is as follows:

TABLE 3

Type of Insured Person

<u>Type</u>	<u>No.</u>	<u>%</u>
Family	318	66.8
Direct	148	31.1
State-insured	6	1.3
Others	4	0.8
TOTAL	476	100

In general terms, for the cantons studied, it can be concluded that for each directly insured person, two indirectly insured ones visit a physician, which is in proportion to the 1973 census data which show 33.3% directly insured persons and 62.7% indirectly insured ones; these findings are also in accordance with a previous study. (7)

Years insured: Table 4 below shows that 51.9% of the insured population in the cantons of Goicoechea, Moravia and Coronado has been insured for longer than five years, which is consistent with the historical expansion of Social Security in the Metropolitan Area.

TABLE 4

Years Insured

<u>Time</u>	<u>No.</u>	<u>%</u>
Less than 1 year	107	22.4
1 - 2 years	67	14.1
3 - 4 years	55	11.6
5 or more years	<u>247</u>	<u>51.9</u>
TOTAL	476	100

Number of visits per insured person in the six months prior to the study. Table 5 shows that 37.6% of the population surveyed saw a physician fewer than three times over a six-month period. The others went to three or more times in the same period.

TABLE 5

Number of Visits in Past Six Months

<u>No. of Visits</u>	<u>No.</u>	<u>%</u>	<u>Cumulative %</u>
One	97	20.5	20.5
Two	81	17.1	37.6
Three	75	15.8	53.4
Four	57	12.0	65.4
Five	48	10.1	75.5
Six or more	<u>118</u>	<u>24.8</u>	100.0
<u>Total</u>	476	100	

Occupations of directly insured individuals. The results obtained include the opinion of directly insured persons interviewed, and also the occupation of directly insured persons responsible for insured family members interviewed.

TABLE 6

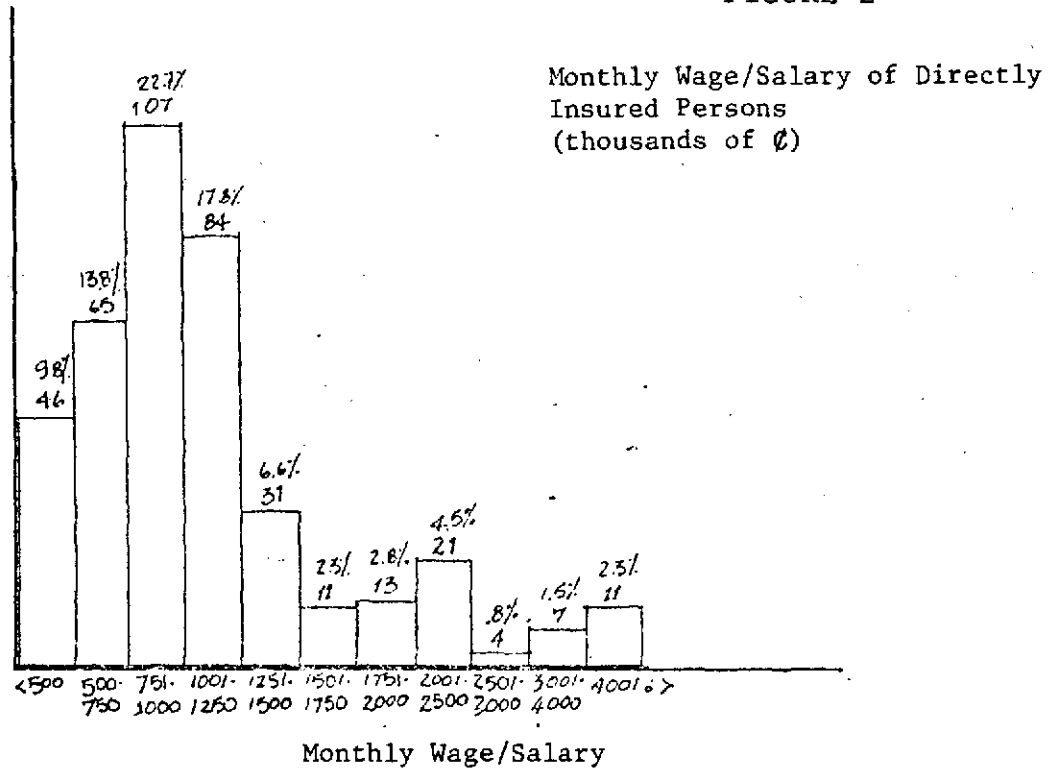
Occupations by Sectors of Directly Insured Persons

<u>Occupation</u>	<u>No.</u>	<u>%</u>
Services	358	76.0
Industry	59	12.5
Pensioner	30	6.4
Agriculture	<u>24</u>	<u>5.1</u>
TOTAL	471	100

It will be observed that the services sector predominates among the population studied.

Monthly income of directly insured persons

FIGURE 2



70.7% of the insured population studied earn less than ₦1,500, a percentage that is a little smaller than that given by the 1973 census, which showed 88% of the Metropolitan Area population earning less than ₦1,500.

Education

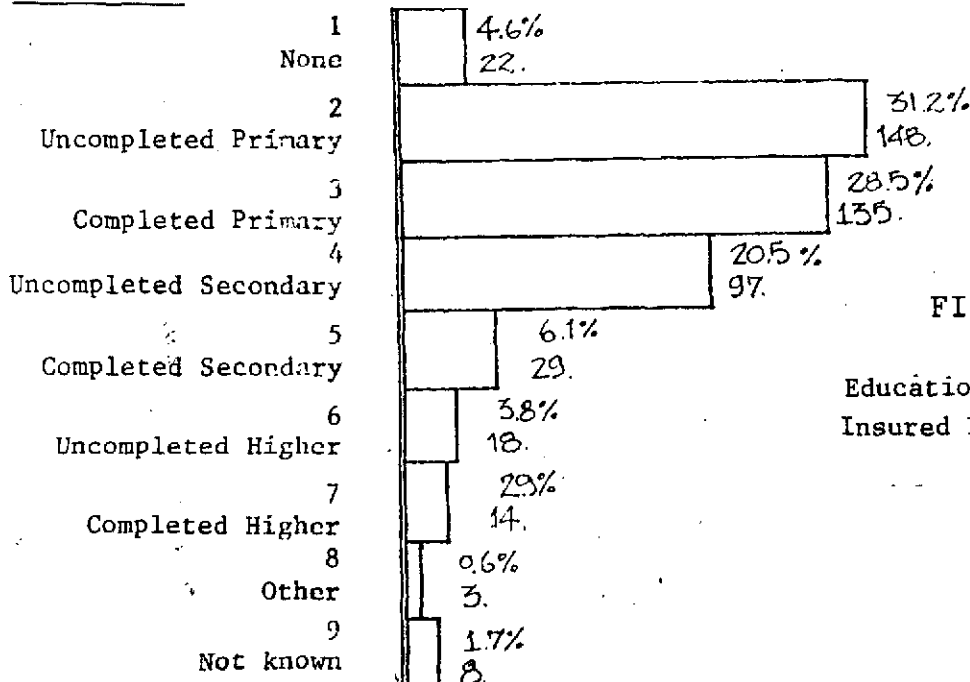


FIGURE 3

Education of Directly Insured Persons

Figure 3 shows that 4.6% of the directly insured individuals received no education and 31.2% of them failed to complete primary education.

Canton of residence of directly insured persons. The breakdown of the sample studied by canton of residence is as follows:

TABLE 7

Residences of Insured Persons by Urban and Rural Cantons

<u>Canton</u>	<u>Total</u>		<u>Urban</u>		<u>Rural</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Goicoechea	248	52.1	236	69.6	12	9.4
Coronado	112	23.5	45	13.3	67	52.3
Moravia	107	22.5	58	17.1	49	38.3
Others	9	1.9	-	-	-	-
TOTAL	476	100	339	100	128	100

The 1973 census, using the same criteria for classifying the population of the three cantons into urban or rural categories, produced the following figures: Goicoechea, urban 70%, rural 30%; Coronado, urban 30%, rural 61%; Moravia, urban 80%, rural 20%.

2. Medical care

The breakdown by specialty of the consultations was as follows, which is consistent with the criterion followed in selecting the sample.

TABLE 8
Prescribing Physician - By Specialty

<u>Consultation</u>	<u>No.</u>	<u>%</u>
General Medicine	339	71.2
Pediatrics	125	26.3
Psychiatry	<u>12</u>	<u>2.5</u>
TOTAL	476	100

Breakdown of duration of ailment. An arbitrary breakdown was made based on the number of days' duration of the condition leading to the consultation, thus enabling a division into chronic and acute ailments. Clearly, through not being based on a clinical diagnosis, a division of this sort is going to induce a number of misclassifications, but it is sufficient for the purposes of this study.

TABLE 9
Breakdown on Basis of Duration of Ailment

<u>Reason for Seeing a Physician</u>	<u>No.</u>	<u>%</u>
Sickness - 15 days	161	34.0
Sick more than 15 days, first visit	89	18.8
Sick more than 15 days, more than one visit	164	34.6
Other	<u>62</u>	<u>12.6</u>
TOTAL	476	100

It is worth noting that visits to physicians on account of ailments of more than 15 days' duration outnumbered those resulting

from troubles of less than 15 days' duration; the "more than 15 days" group includes ailments of a certain chronic or repetitive nature.

Doctor-patient relationship: To assess the patient's view of the doctor-patient relationship, four questions were asked (see Figure 4).

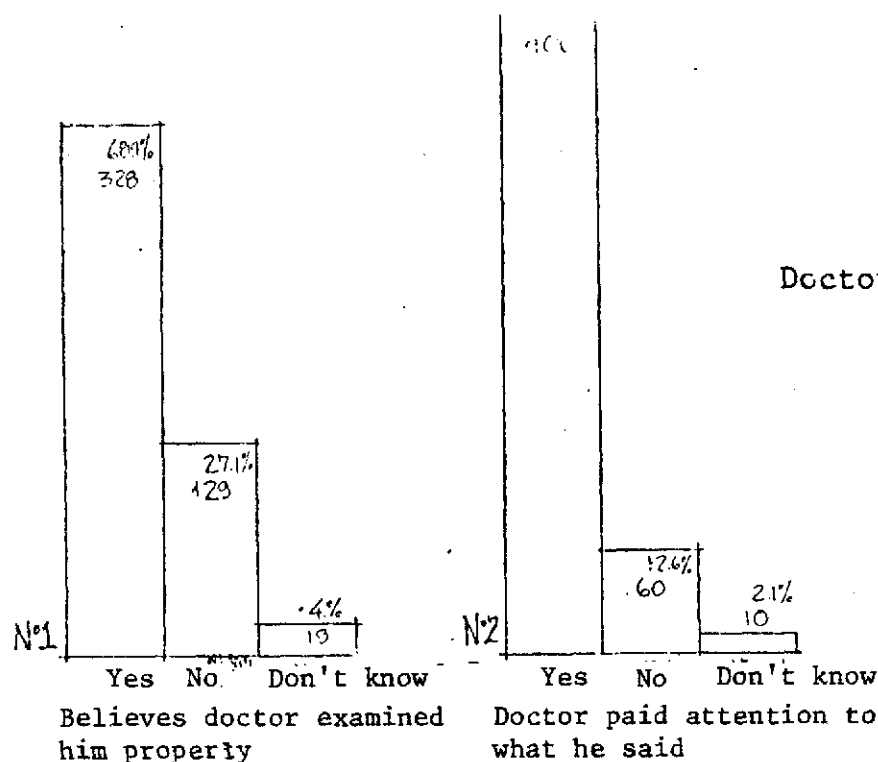
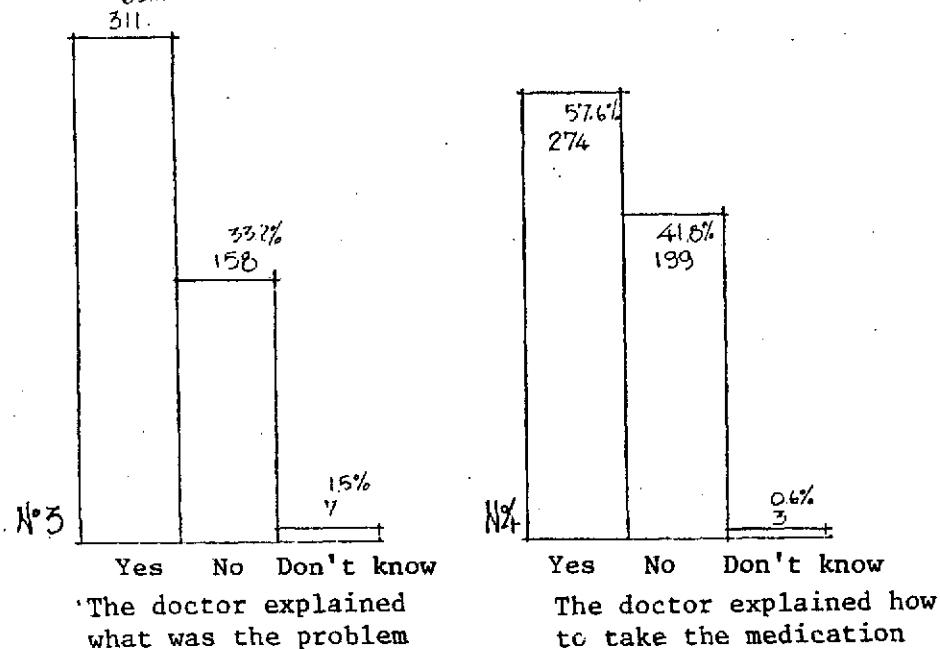


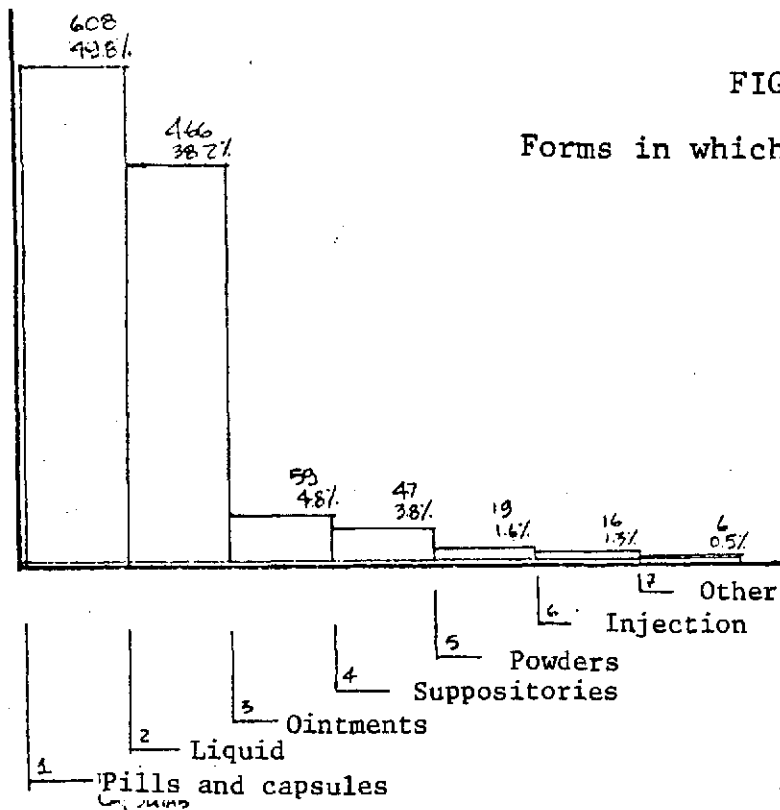
FIGURE 4

Doctor-Patient Relationship



It would appear from these replies that the doctor-patient relationship is not optimum, since there ought to be a larger number of affirmative answers. However, the questions are inadequate in terms of both number and interview methodology, so reliable conclusions cannot be drawn.

3. Form in which medication prescribed: The doctors prescribed the 848 medications concerned in the following forms:



4. Drugs most frequently prescribed

According to the CRSIF Basic Table of Drugs, there are 848 available. During the study period, 1,221 prescriptions

were written for 476 patients, involving 253 varieties of medicine from the Basic Table (see Table 10).

TABLE 10
Thirty-three Most Frequently Prescribed Drugs

<u>Generic Name</u>	<u>Key</u>	<u>Frequency</u>	<u>Cumulative Percentage of Total Prescribed</u>
1. Acetaminophen	M-340	38	3.1
2. Dextromethorphan	M-651	35	6.0
3. Ampicillin, oral	M-2	33	8.7
4. Methyl liniment	M-586	30	11.2
5. Erythromycin, drops	M-623	28	13.5
6. Acetaminophen, sup.	M-676	27	15.7
7. Vit. B ₁₂ , Elixir	M-249	25	17.7
8. Indomethacin, caps.	M-584	25	19.7
9. Ar-9 Expect.	M-131	24	21.6
10. Papain, tab.	M-608	24	23.5
11. Oxymethazoline ophthalm.	M-445	23	25.3
12. Erythromycin, caps.	M-17	21	27.0
13. Multivitamins, oral	M-225	21	28.7
14. Hidroxal	M-92	18	30.2
15. Ampicillin, drops	M-621	18	31.7
16. Tetracycline, caps.	M-47	17	33.1
17. Tri-B-Phosphates	M-604	17	34.5
18. Atrophibarbital, liq.	M-634	16	35.8
19. Cortisone-Hydroquin, oint.	M-459	16	37.1
20. Propantheline, pills	M-112	15	38.3
21. Aspirin	M-342	15	39.5
22. Ergotamine-caffein	M-157	14	40.6
23. Reserpine	M-171	14	41.2
24. Hydroxalcon atropibar	M-859	14	42.8
25. Methanamine, Mandelate	M-25	13	43.8
26. Alpha-methyl dopa, tab.	M-151	13	44.8
27. Cetrimide, sol.	M-467	13	45.8
28. Phenylbutazone	M-583	13	46.8
29. Paidol	M-679	13	47.8
30. Diiodohydroxyquin, tab.	M-85	12	48.7
31. Vitamin C, 500 tab.	M-251	11	49.6
32. Clofibrate, 500	M-197	10	50.4
33. Diazepam, tab. 5	M-283	10	51.3
TOTAL		636	51.3

Percentage consumption of the drugs. For a variety of reasons, patients either halt the treatment or fail to follow the directions. Table 11 shows that only 43% of the patients took between 76% and 110% of the medication, while the ideal would be 100% consumption.

TABLE 11

Percentage Consumption* of Medication**

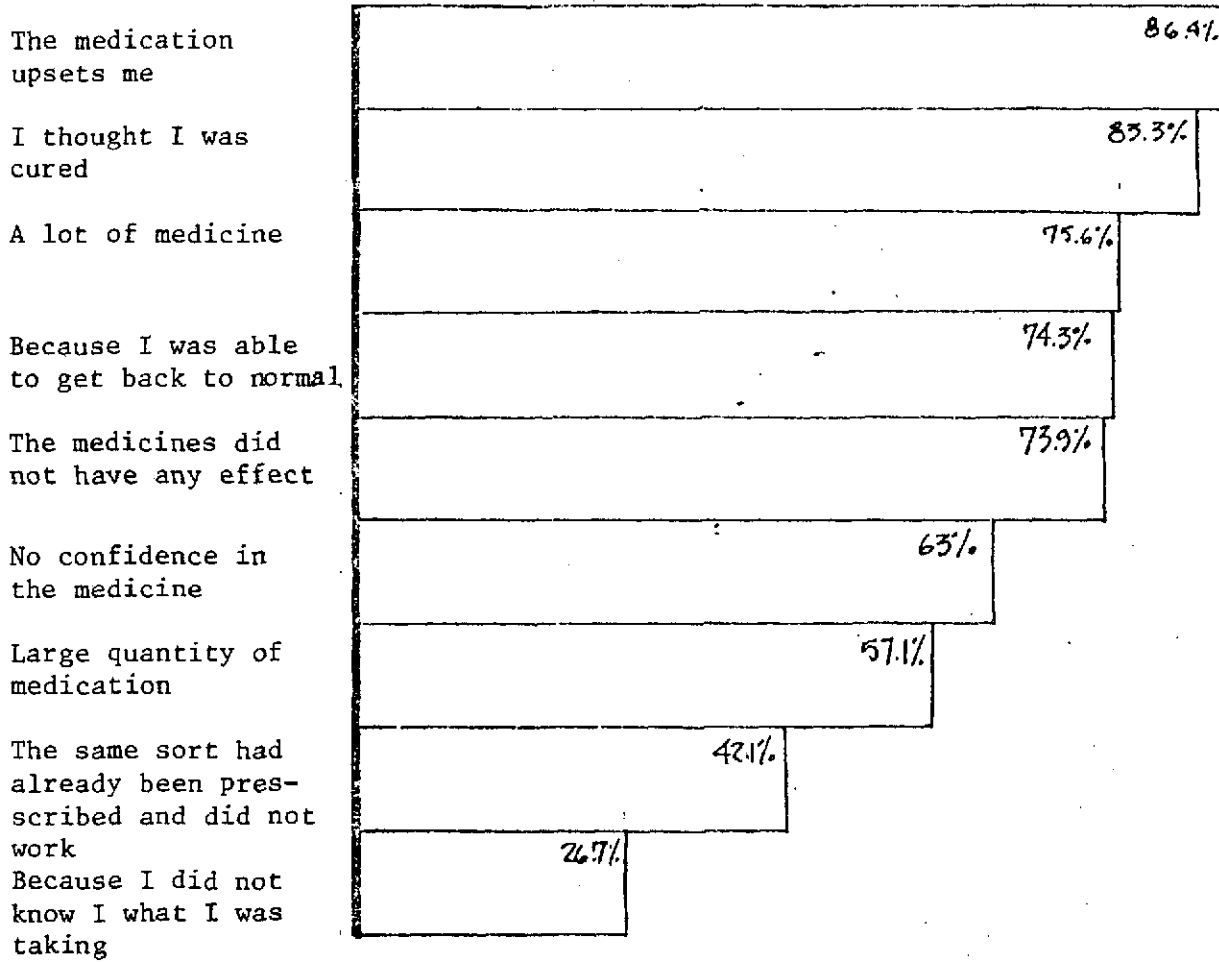
<u>Percentage Consumption</u>	<u>No.</u>	<u>%</u>	<u>% Cumulative</u>
0 - 45%	282	29.1	29.1
46 - 75%	198	20.4	49.5
76 - 110%	417	43.0	92.5
111% or more	72	7.5	100
TOTAL	969	100	100

* Percentage consumption relates to the proportion consumed as of the time of the visit, based on what should ideally have been consumed according to the physician's prescription. The ideal consumption would be 100%.

** Of the total 969 medicines studied, 252 were not included as they could not be measured.

Reasons for failure to consume all the medicines prescribed
 During the study period, 63.8% of the patients consumed less than 90% of the quantities prescribed by the physician. The main reasons given for this were:

FIGURE 6
Reasons for not Taking all
the Medications Prescribed



Medication sought from physician. The study showed that 52% of all the drugs and medication prescribed were requested by the patient, those most often asked for being: (1) Paidol; (2) expectorants; (3) multivitamins; (4) dandruff shampoos; (5) saccharin.

Analysis of Consumption of Medication According to
Various Variables

The consumption of medication by people is a complex process in which variables of very varied types come into play. Study of these variables helps toward understanding of the problem of the proper or inadequate consumption of drugs prescribed; the basic purpose of this study is to make a start on identifying the main factors interrelated with the consumption of drugs. Accordingly, for the first time in Costa Rica, general data of a social nature have been gathered and related to a particular medical practice, that of the CRSIF suburban clinics. The data compiled are not applicable to all the country's institutional clinics in both rural and urban areas, because the sample studied has demographic, geographic and socio-economic characteristics which differentiate it from other groups. However, various hypotheses have been clearly established which are valid at national level as regards drug consumption. The writers of this study found a large quantity of literature dealing with the subject, based on the prescription and not actual consumption as the unit of analysis. This study took as fundamental hypothesis for understanding the act of consuming medication, that the patient takes everything that is prescribed for him, according to the nature of his ailment and the efficacy of the medication prescribed. Accordingly, the factors of a social nature

(education, profession, occupation, sex, age, etc.) are highly significant in identifying the reasons why he consumes more or less than a particular prescription specifies. This information is especially important with regard to Social Security patients, who, unlike patients in "free" clinics or private patients, may have an attitude that is between that of a patient who receives something he knows he is not paying for and that of someone who pays for a prescription on the basis of personal confidence in the prescribing physician.

Similarly -- on the basis of the data gathered -- the factor "because there was no alternative" which applies in the "free" clinics, or the freedom of the private patient to select the physician of his choice, do not really enter into the equation for assessing the efficiency of the consultation by the consumption of the medication prescribed. The writers have the impression that if this study were to be repeated with "free" clinic patients and private patients the results would be largely the same.

For better understanding of this analysis we shall limit the discussion to five basic aspects connected with the consumption of medication:

1. Some Descriptive Characteristics of the Insured Person and the Percentage Medication Consumption

Age: Table 12 shows that the percentage consumption is

lowest (0 - 45%) in the under one-year age group. There is a distinct trend in the other groups, with increasing age, toward consumption of the medication as directed.

TABLE 12
Percentage Medication Consumption by Age

Percentage Consumption	Age in Years									
	1		1-9		10-19		20-39		40 & over	
	No.	%	No.	%	No.	%	No.	%	No.	%
0 - 45	25	48.1	58	28.4	47	29.6	87	31.1	65	23.7
46 - 75	8	15.4	47	23.0	34	21.4	52	18.6	57	20.8
76 - 110	13	25.0	77	37.7	66	41.5	131	46.8	130	47.4
111 or more	6	11.5	22	10.8	12	7.5	10	3.6	22	8.0
TOTAL	52	100	204	100	159	100	280	100	274	100

Although the study did not go into the reasons and attitudes of the parents of children under one to ascertain just why they did not give them the full doses or dropped the treatment altogether, the following possible reasons can be listed: (a) most of these children are brought to the clinic because of symptoms, e.g. "fever", "diarrhea" "cough", etc. and their parents stop giving them the medication as soon as these symptoms disappear; (b) the parents are afraid of overdosing; (c) since it is not the parents who are sick, once they no longer observe the symptoms they tend to drop the regular dosing (a sleeping child is

rarely awakened to be given medicine; the night-time doses are generally omitted because either the children or their parents are sleeping; (d) the non-availability of suitable spoons or calibrated dispensers or the parents' unfamiliarity with the decimal system lead to errors of dosage.

2. Sex. Some researchers have noted that women tend to consult physicians more often and therefore have more medication prescribed for them than men. However, no study has been made of the proportion actually consumed.

TABLE 13

Percentage Medication Consumption by Sex

Percentage Consumption	Men		Women	
	No.	%	No.	%
0 45%	89	28.2	193	29.6
46 75%	67	21.2	131	20.1
76 - 110%	137	43.4	280	42.9
111 or more	23	7.3	49	7.5
TOTAL	316	100	653	100

Table 13 reveals two important facts:

- (1) That in the present study there is no difference in percentage medication consumption between the sexes, and
- (2) That women do in fact consult physicians more often than men, and thus receive more prescriptions (in this study, the ratio is 2 to 1).

3. Civil status and other factors: While the study showed that there were no major differences in medication consumption by civil status, a breakdown of the population studied by employment sectors revealed that those depending on or belonging to the primary--i.e., agriculture--sector were the least likely to take medication as instructed:

TABLE 14

Percentage Medication Consumption by Employment Sector of the Directly Insured Person

Percentage Consumption	Agriculture		Industry		Govt. Service		Retired	
	No.	%	No.	%	No.	%	No.	%
0 - 45	15	35.7	42	29.8	204	28.9	18	28.1
46 - 75	12	28.6	31	22.0	143	20.0	11	17.2
76 - 110	14	33.3	52	36.9	319	44.6	30	46.9
111% or more	1	2.4	16	11.3	50	7.0	9	7.8
TOTAL	42	100	141	100	716	100	68	100

This fact is confirmed by the social configuration of the agricultural workers as shown by the study of consumption by income and education of the directly and indirectly insured persons.

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TABLE 15

Percentage Medication Consumption by Monthly
Income of Directly Insured Person*

Percentage Consumption	500 - 1000		1001 - 2000		2001 or more	
	No.	%	No.	%	No.	%
0 - 45%	134	29.0	74	26.0	70	32.9
46 - 75%	96	20.8	69	24.2	32	15.0
76 - 110%	199	43.1	121	42.5	93	43.7
111% or more	33	7.1	21	7.4	18	8.5
TOTAL	462	100	289	100	213	100

*In colons.

TABLE 16

Percentage Medication Consumption by Education
Level of Directly Insured Person*

Percentage Consumption	None Uncompleted Primary		Completed Primary Uncompleted Secondary		Uncompleted Higher Completed Higher	
	No.	%	No.	%	No.	%
0 - 45%	107	29.6	150	28.4	19	33.3
46 - 75%	77	21.3	109	20.6	7	12.3
76 - 110%	151	41.8	227	43.0	28	49.1
111% or more	26	7.2	42	8.0	3	5.3
TOTAL	361	100	528	100	57	100

*For all interviewees.

TABLE 17

Percentage Medication Consumption by Education
Level of Persons Covered Under Family Insurance*

Percentage Consumption	None		Uncompleted Primary Completed Primary		Uncompleted Secondary Completed Secondary Uncompleted Higher	
	No.	%	No.	%	No.	%
0 - 45%	74	32.6	87	25.7	28	29.2
46 - 75%	44	19.4	77	22.8	19	19.8
76 - 110%	82	36.1	152	45.0	42	43.8
111% or more	27	11.9	22	6.5	7	7.3
TOTAL	227	100	338	100	96	100

*Relates only to family members.

By way of conclusion we can state that the data obtained demonstrate that the group whose consumption pattern is least in accordance with prescription directions is the one with the least education and the lowest income. There are, of course, complex socio-economic reasons for this that call for more in-depth research. It is sufficient to note for the moment that the chief contributing factors include:

(a) incomplete communication between the prescribing physician and the recipient; (b) the theory of Luc Zoltanski (c) that a physician's manner differs depending on the class of the person consulting him is confirmed; (c) that this social sector, which is largely without formal education so that its knowledge is made up of its own interpretation and the residue of former knowledge of dominant sectors and classes (8), seeks from medical consultations a response to

unclearly identified needs or uses medication on the basis of concepts that are different from those which motivated the physician's prescription. After all, if the person is not satisfied, it cannot be expected that the medication will be taken as directed or that his needs will be met.

2. Consumption of Medication and Medical Care

Table 18 correlates the number of times those studied consulted a physician during a six-month period:

TABLE 18

Percentage Consumption According to Number of Consultations in Past Six Months

Percentage Consumption	1		2		3		4		5		6	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0	52	29.7	48	29.6	43	26.9	40	36.4	30	28.8	67	26.5
46 - 75%	39	22.3	31	19.1	31	19.4	26	23.6	18	17.3	53	20.9
76 - 110%	76	43.4	70	43.2	74	46.3	41	37.3	46	44.2	108	42.7
111% or more	8	4.6	13	8.0	12	7.5	3	2.7	10	9.6	25	9.9
TOTAL	175	100	162	100	160	100	110	100	104	100	253	100

It should be noted that there is clear overmedication in the group who made six visits in the course of the six months. Previous studies (7) made in the same universe, i.e., the population served by the Dr. Ricardo Jiménez Núñez Clinic, revealed that the population under age one and that over 65 consulted physicians proportionally more often than the rest. In the others, the curve is downward till age 5, after which it begins to rise, moving up sharply from age 45 onward.

Various hypotheses can be put forward to account for this, one being that those who make frequent calls on the physician are consumers of both drugs and medical consultations, in an endeavor to resolve problems which cannot be solved through traditional medical care. This same study indicates that children under age one form the group which actually takes the smallest percentage of the medication prescribed. Table 18 shows that the aged are prescribed more medication than they need and that they see the physician proportionally more often than the rest of the sample. We can accordingly conclude that both the mother who brings her child and the old person who wants to talk to the physician and receive medication must be suffering from psychosociobiological troubles that need to be studied and resolved outside of the traditional medical context.

Tables 19 and 20 show that the rural population consumes proportionally less of the medication prescribed than the urban population.

TABLE 19

Percentage Consumption by Canton of Residence

Percentage Consumption	Goicoechea		Moravia		Coronado		Otros	
	No.	%	No.	%	No.	%	No.	%
0 - 45%	154	29.3	57	25.6	64	31.8	4	50.0
46 - 75%	104	19.8	39	17.5	50	24.9	1	12.5
76 - 110%	227	43.2	114	51.1	69	34.3	2	25.0
111% or more	40	7.6	13	5.8	18	9.0	1	12.5
TOTAL	525	100	223	100	201	100	8	100

TABLE 20

Percentage Consumption According to Whether Urban or Rural Dweller

Percentage Consumption	Urban		Rural	
	No.	%	No.	%
0 - 45%	202	28.6	77	30.2
46 - 75%	133	18.8	63	24.7
76 - 110%	325	46.0	90	35.3
111% or more	47	6.6	25	9.8
TOTAL	701	100	255	100

Finally, it should be noted that this study does not show any significant difference in consumption of prescribed medication between directly insured persons, family members and State-insured individuals.

3. Doctor-Patient Relationship with Reference to Percentage Consumption of Prescribed Medication. In the analysis of the data deriving from Figure 4 it has already been demonstrated that the doctor-patient relationship is relatively deficient. Tables 21 - 25 consider this attitude of the patient's in order to ascertain its relationship to the consumption of the medication prescribed.

TABLE 21

Percentage Consumption of Medication According to Explanation of Ailment Given by Physician

Percentage Consumption	Yes		No		Don't Know	
	No.	%	No.	%	No.	%
0 - 45%	179	28.4	99	30.3	4	36.4
46 - 75%	124	19.7	73	22.3	1	9.1
76 - 110%	283	44.8	129	39.4	5	45.5
111 or more	45	7.1	26	8.0	1	9.1
TOTAL	631	100	327	100	11	100

TABLE 22

Percentage Consumption of Medication According to Patient's
Belief That Physician Did or Did Not Know What Was Wrong

Percentage Consumption	Yes		No		Don't Know	
	No.	%	No.	%	No.	%
0 - 45%	204	31.2	36	23.8	39	24.8
46 - 75%	118	18.0	33	21.9	44	28.0
76 - 110%	286	43.7	70	46.4	60	38.2
111% or more	46	7.0	12	7.9	14	8.9
TOTAL	654	100	151	100	157	100

TABLE 23

Percentage Consumption of Medication According to Whether
Patient Believed Physician Paid Attention to Him

Percentage Consumption	Yes		No		Don't Know	
	No.	%	No.	%	No.	%
0 - 45%	237	28.8	40	32.8	5	20.8
46 - 75%	167	20.3	27	22.1	4	16.7
76 - 110%	359	43.6	48	39.3	10	41.7
111% or more	60	7.3	7	5.7	5	20.8
TOTAL	823	100	122	100	24	100

TABLE 24

Percentage Consumption of Medication According to Patient's
Belief That He Was Given a Proper Examination

Percentage Consumption	Yes		No		Don't Know	
	No.	%	No.	%	No.	%
0 - 45%	185	27.7	90	33.7	7	20.6
46 - 75%	138	20.7	54	20.2	6	17.6
76 - 110%	292	43.7	107	40.1	18	52.9
111% or more	53	7.9	16	6.0	3	8.8
TOTAL	668	100	267	100	34	100

TABLE 25

Percentage Consumption of Medication According to Physician's
Explanation of How to Take it

Percentage Consumption	Yes		No		Don't Know	
	No.	%	No.	%	No.	%
0 - 45%	147	27.1	135	32.1	0	0.0
46 - 75%	116	21.4	81	19.3	1	16.7
76 - 110%	239	44.0	174	41.4	4	66.7
111% or more	41	7.6	30	7.1	1	16.7
TOTAL	543	100	100	100	6	100

The percentage of patients whose consumption was acceptable--i.e. 76 - 110%--did not show significant differences when crossed with the indicators used to explore the doctor-patient relationship. The present study had formulated the hypothesis that the degree to which patients take the medication as directed is related to their confidence in the physician, the explanation they are given of their ailment and the extent to which they fully understand the instructions given them. The results of Tables 21 - 25 refute this hypothesis but point up the need to identify the assumptions under which a patient takes a particular medication. From the data available, it would appear that the sample studied possibly consumes the medication without its degree of confidence in the prescriber having much effect either way. Other factors such as presentation, color, form, flavor, side effects and the mechanism by which a drug acts may be of greater importance for the patient than what has traditionally been referred to as a good doctor-patient relationship.

4. Other Variables Connected with the Consumption of Medication

As already noted, certain aspects of the consumption of medication were explored because they were frequently thought to be significant from the quantitative and qualitative point of view regarding the consumption of certain types of medication, such as: (a) reason for consulting physician;

(b) obtaining of certificate; (c) self-treatment; (d) degree of awareness on the patient's part of the characteristics of the ailment; (e) presentation of the medication; (f) whether the patient already had the prescribed medication in his home. All of these variables were studied with a view to ascertaining whether or not they had any influence on the way the patient followed the treatment recommended by the physician.

Table 26 studies the behavior of the patients according to the consumption of the medication in relation to the chronicity or otherwise of their ailment.

TABLE 26

Percentage Consumption of Medication According to
Duration of Sickness

Percentage Consumption	Less than 15 days		More than 15 days First Consultation		More than 15 days Several Consultations	
	No.	%	No.	%	No.	%
0 - 45%	104	31.6	50	28.2	83	24.8
46 - 75%	69	21.0	43	24.3	64	19.1
76 - 110%	128	38.9	74	41.8	162	48.4
111% or more	28	8.5	10	5.6	26	7.8
TOTAL	329	100	177	100	335	100

It is worth noting that patients whose sickness lasts for longer than 15 days tend to take the medicines as directed, unlike those who see the physician for ailments of shorter duration.

It has been presumed that many patients who went to the physician to obtain a certificate did so more to get the certificate than because of any actual incapacitating condition, which would be reflected, in this group, by a much lower consumption of medication. At the same time, it was thought that the certificate would reflect a certain seriousness of the ailment so that this group would tend to follow the recommended treatment more precisely. The data obtained would appear to indicate that there is no significant difference between the patients who come for certificates and those who do not require certificates. Neither is there any difference, as regards consumption, between those who are off work for one day and those who are away longer.

Table 27 relates consumption to the number of medications prescribed.

TABLE 27

Percentage Consumption of Medication by Number
of Medications in Prescription

Percentage Consumption	1 - 2		3 - 4		5 or more	
	No.	%	No.	%	No.	%
0 - 45%	100	31.3	160	27.8	18	25.7
46 - 75%	68	21.3	109	18.9	20	28.6
75 - 110%	133	41.7	260	45.5	23	32.9
111% or more	18	5.6	45	7.8	9	12.9
TOTAL	319	100	576	100	70	100

If the percentage consumptions are combined it will be noted that there are marked differences between consumption by those for whom one or two drugs are prescribed and those who have to take three and four, or five or more, since consumption improves when three or four are prescribed but declines noticeably when five or more are involved.

As far as this study is concerned, self-treatment is not common, as already noted in the descriptive chapter. No appreciable difference is found when the requests for medication on the part of patients are related to the form in which it is consumed.

TABLE 28

Percentage Consumption by Presentation of Medication

Percentage Consumption	Pills		Liquids		Injections		Suppositories	
	No.	%	No.	%	No.	%	No.	%
0 - 45%	149	26.4	118	33.4	-	-	12	36.4
46 - 75%	114	20.2	74	21.0	2	18.2	8	24.2
76 - 110%	270	47.8	124	35.1	9	81.8	11	33.3
111% or more	32	5.7	37	10.5	-	-	2	6.1
TOTAL	565	100	353	100	11	100	33	100

As regards the presentation of the product (Table 28), it can be seen that the best consumption percentages are accounted for by injections and pills, while the percentages for medication in liquid and suppository form are distinctly lower. In the first case, it should be ascertained whether patients tend to keep up injections better because they think them more effective or view them as "stronger" than the other forms. The low consumption percentages for suppositories are not explained either and it needs to be established whether there are reasons of a cultural nature which spur patients to quickly drop this form of medication.

As regards the liquid forms, it is apparent that, compared with pill consumption, both overdosing and lower consumption occur. The reason for this could be connected with the fact that there is no appropriate dispensing device for liquids, since there are no rational explanations why there could be such differences with other forms of presentation.

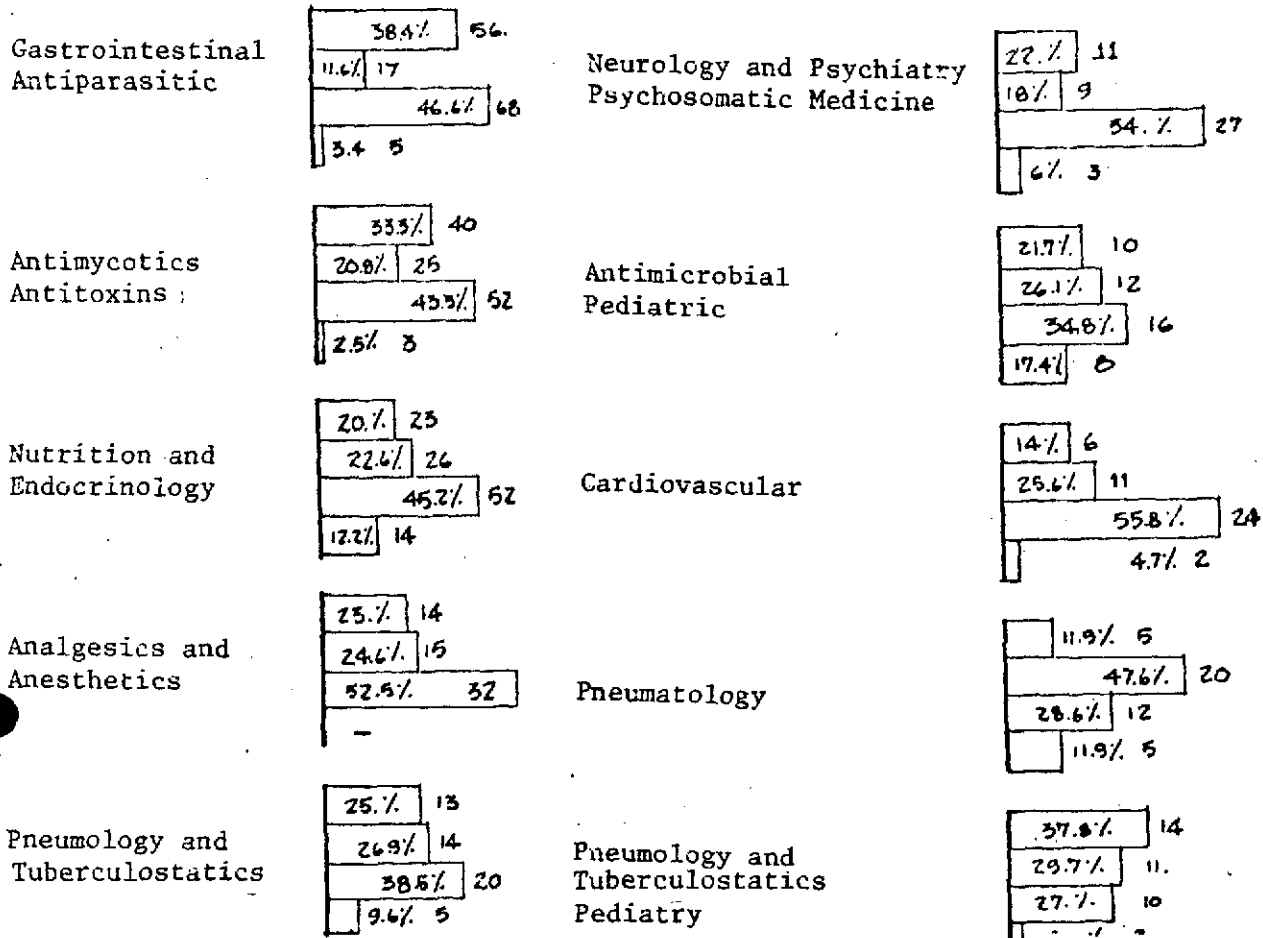
There are no differences, in the data gathered, between consumption and the opinion the patient has formed of the seriousness or otherwise of his condition.

5. Percentage Consumptions for the Ten Most Frequently Prescribed Groups of Drugs

The high percentages of low-consumption or failure to continue with treatment should be noted in the most prescribed groups. The antirheumatic, antibiotic, bacteriostatic and pneumologic group is among those with the lowest consumption percentage, whereas by the nature of their effectiveness and the type of diseases susceptible to this type of treatment they should have the highest consumptions (see Figure 7).

FIGURE 7
Percentage Consumption for the Groups of Drugs
Most Frequently Prescribed

0. - 45%
46% - 75%
76 - 110%
111 +



SUMMARY OF CONCLUSIONS

1. General Descriptive Characteristics

One of the most striking descriptive characteristics brought out by this study is the markedly greater (66%) tendency on the part of women to consult a physician. With regard to the general population, married persons and

widow(er)s tend to visit a physician more often. The ratio of consultation by indirectly insured persons to directly insured persons is 2 : 1. Some 76% of those visiting physicians, whether directly or indirectly insured, derive their livelihood from the services sector. Seventy percent of the directly insured individuals declare monthly incomes of less than \$1,500.

2. Characteristics of the Use Made of the Services

In the sample studied, some characteristics of the use made of the services are striking; 66.3% of the sample had consulted a physician on three or more occasions in the six months preceding the study. The group of patients who claimed to have had some sickness or infirmity for longer than 15 days predominated over those whose troubles were of less than 15 days' duration. The patients display a "confidence" in the physician treating them even though this relationship does not fulfill the requirements for an adequate doctor-patient relationship.

3. Characteristics of the Prescription and Consumption of Drugs

One of the characteristics observed in the prescribing and consumption of medication was that of the 476 prescriptions studied, with 1,221 products, only 30% of this available "arsenal" was used. Some 43% of the products prescribed are between 76% and 110% consumed by the mid-point in the treatment. The main reasons noted for this underconsumption are (in descending order of significance) the side effects produced by the drugs, the patient feeling himself cured, the large quantity of medication provided, and lack of confidence in the medication prescribed.

4. Characteristics of Drug Consumption

Finally, certain relationships should be noted between the percentage consumption of medication and some characteristics of the patients. Children under one year are the ones who depart most from the directions for taking the medication prescribed, compared with the other age groups. Women, although they consult physicians more often, consume the same proportion as men. There is no significant difference in the percentage consumption by civil status.

Patients belonging to the primary--agriculture--sector, together with those with the least education and lowest incomes, are proportionally less likely to follow the directions in taking prescribed drugs. The same applies to persons living in rural areas. There is a tendency to overmedication in patients who visit a physician often.

Patients with long-lasting ailments follow the directions more closely. There are no differences in consumption according to the individual's idea of the seriousness of his complaint. No differences were found between consumption and the medical certificate issued to the patient. The differences in the doctor-patient relationship did not affect the percentage consumption of the drugs prescribed. The larger the number of drugs prescribed, the less likely are they to be taken as directed.

RECOMMENDATIONS

1. There are educational, socio-economic, etc., characteristics which cause the consumption of medication to differ between the social classes. We believe that further study of these factors is needed in order to be able to understand them better and to take the steps required to correct the poor use and consumption of medication.
2. The consumption of medication differs between children and adults. We presume that there are different reasons for seeing a physician, depending on the patient's age group, and that these reasons require study.
3. The causes which lead an individual to drop treatment, consume medication and request prescriptions should be investigated.

4. Although this study indicates certain of the reasons for dropping treatment, a more in-depth study needs to be made of the causes behind the early dropping of medical treatment.
5. The attitudes and beliefs of the patients regarding the presentation and methods of administration of medication and the way in which these influence consumption need to be studied.
6. The doctor-patient relationship should be studied, taking into account the perception of this relationship by both the physician and the patient.
7. The quantity of drugs that should be issued under any one prescription ought to be looked into, since patients with short-duration ailments drop the treatment earlier than those with chronic complaints.
8. Dispensers should be used for liquid products.
9. The presentation of the product should be changed as regards form, number, appearance and packaging, specifying in the directions (which must be clearly written) the manner in which the medication acts, any side effects and the dosage.

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SUMMARY

This study seeks to compile data on the characteristics of medication prescribed by medical personnel of the Costa Rican Social Insurance Fund (CRSIF) and on the consumption of such medication by the insured population which consults this personnel. A sample was accordingly taken of 616 patients who received prescriptions from the Dr. Ricardo Jiménez Nuñez Suburban Clinic of the CRSIF during a period of approximately one month (November 1976) and a precoded questionnaire was applied at two moments: (1) at the time the drugs were received in the clinic, and (2) halfway through the course of treatment.

The data gathered relate to the following aspects:

1. Some descriptive characteristics of the socioeconomic condition of the patients.
2. Identification of certain causes which explain the inadequate consumption of the drugs prescribed.
3. The incidence on the consumption of drugs of certain aspects of the doctor-patient relationship.
4. The drugs most frequently prescribed by CRSIF medical personnel.