

JOINT FDI/WHO WORKING GROUP 5 ON CHANGING PATTERNS  
OF ORAL HEALTH

ORAL HEALTH IN BRAZIL

-- Vitor Gomes Pinto<sup>\*</sup>  
-- October/1982 --

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### 1. INTRODUCTION

Brazil, a country which spans a continent, with a population of more than 120,000,000 and a Gross National Product per capita of US\$ 2,048.60, presents an epidemiological picture typical of an area in development, where the access to dental care is difficult due principally to economic barriers.

The growing number of dental faculties - 66 in all - training 5,200 new dentists each year, has done little to improve the population's level of oral health, only succeeding in preventing it from becoming worse. In reality, in spite of the increase in the ratio of dentists to population, the oral health situation in the last decade has undergone no visible change.

Dental care remains predominantly curative strongly dominated by the private sector (about 75% of available dentist/hours). The public sector has acted timidly but since 1,977 there has been a definite improvement with the development of a new scheme, which started in Brasilia but has gradually being taken up by other States.

This program aims to treat 1<sup>st</sup> grade students (6-14 year olds) using simplified, locally produced equipment trained auxiliaries and "appropriate" working techniques to obtain greater coverage at reduced cost.

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\*: Advisor of the Ministry of Planning of Brazil. In October/82.



## 2. THE POPULATION (Tables 1 and 2)

With a demographic density of 14 inhabitant per km<sup>2</sup> (according to the 1,980 Census), Brazil has shown a clear decline in its rate of population growth. In spite of the accelerated process of urbanization, this tendency should prevail in the future. It is estimated that around the year 2,000 the rural population (which today is 31% of the total) will stabilize at around 20%, but helped by a greater modernization of national agriculture. 25.5% of the Brazilians of age 10 and older are still illiterate.

Thus, a reduced income per capita would be expected, though it has increased continuously at the same rate as the minimum monthly salary (70% of the workers earn at the most 5 minimum salaries, that is, close to 374 dollars per month). The national economy, measured by the GNP, after an average rise of 8% per annum between 1970 and 1980, showed a negative rise in 1981, while the external debt, which was of US\$ 53.8 thousand million in 1980, is now more than US\$ 85 thousand million.

## 3. ORAL DISEASE STATUS (Tables 3 to 7)

There is a little epidemiological data available. The majority concerns the prevalence of dental caries in low school students, in which the DMF-T has an average value of 1.64 at 6 years of age, reaching 7.25 at 12 years old (average of 5.20 in the age group of 6 to 14 years, with significant predominance of the "D" factor which represents 61% of the total of affected teeth).

In the population of 6 to 59 years old, one can observe a gradual increase in the DMF-T rate, basically at the cost of extracted teeth. Mainly for economic reasons, a Brazilian on average, reaches 39 years of age with 12 extracted teeth, and at 59 years of age he has already lost 24 teeth.

Estimations for the year of 1980, indicate that in the age group of 6 to 59, there is an accumulated necessity for treatment of 559 million teeth (for filling or extraction), which involves spending approximately US\$ 4.5 million if undertaken by the

public sector. Additionally, it is calculated (according to Viegas, A.R.) that there are 143 million temporary teeth in need of treatment, moreover the high number of extractions gives rise a demand for 15 million sets of dentures.

In relation to Periodontal Disease (according to Badeia Marcos), the prevalence rate is alarming, mainly among the rural population. It is estimated that almost the entire Brazilian adult population needs conservative treatment, which is only available in private clinics, and highly expensive.

Statistics referring to notified cases of cancer, reveal that a high percentage is located in the mouth (8.5% for men and 2.3% for women). It is observed that in the age groups of 15 to 44, and of 45 to 64, oral cancer is the third most common cancer in men.

In relation to orthodontical problems, using the Draker rate, it is estimated that 10% of the children between 7 and 14 years old need treatment.

#### 4. CARIES PREVENTION (Table 8)

The fluoridation of the public water supply is the chosen method for the prevention of dental caries in Brazil. A recent introduction of this process in the larger cities (though not including São Paulo, the largest), means that now 21% of the population is covered, helping a total of almost 26 million people in 444 cities.

The Sodium Fluosilicate is the most commonly used salt (71 % of the systems of fluoridation), followed by Flusilicic Acid (17%) and by Calcium Fluoride (11%), all already nationally produced. The occurrence of natural fluorine is rare. By the year 2000, approximately 85% of the urban population should have treated water, at least half of this containing fluorine.

Alternative methods are used on small scale, in mouthwash with Sodium Fluoride or topical applications of fluorine in programs for school children.



The consumption per capita of sugar which was of 39 kg/year in 1972, rise to 44 kg in 76 and to 45.2 kg in 1981. Brazil is the world's second producer of sugar-cane (after India) with 149 million tons collected in 1981. In fact it was the sugar that constituted the economic base for the European colonization of the country (mainly Portuguese and Dutch, in the XVI century), during a period when this was the most important commodity of international trade. Other than the growing popularity of chocolate, coffee was responsible for the increase in sugar consumption (the consumption of coffee is conducive to the use of at least an equal amount of sugar, usually), making it very difficult to obtain control over dental caries through a reduction in consumption by the spread of education.

On the other hand, the high price of protein obliges poor people to have a caloric diet (based on carbohydrates).

On the list of products exported by Brazil, fundamental to the payment of the high external debt, coffee takes the first place and sugar the 4<sup>th</sup> (minerals in 2<sup>nd</sup> and soya in 3<sup>rd</sup>).

Regular programs for control of Dental Bacterial Plaque are still rare, though an increasing number of specialists in the public health sector are developing studies (in the Catholic University of Minas Gerais, for example) with a view to generalize the use of preventive methods at accessible costs in this area.

## 5. HUMAN RESOURCES (Tables 9 to 11)

The number of Dentists rises annually at a rate greater than the increase of the general population: the Dentist/10,000 Inhabitants rate went from 3.28 in 1960 to 3.65 in 1970 and to 5.13 in 1980, and is already 5.51 now. If the annual rise in the number of professionals is maintained, the rate will be 9.51 in the year 2000.

There is, however, a strong concentration of dentists in the larger cities (50% work in the capital where 25% of the inhabitants live), well as with the population of the highest incomes. It is calculated that in 1980, for 70% of the population (with a maximum monthly income of 5 minimum salaries), the rate was 1.67/10,000; while for the 30% financially capable of paying for their treatment, the rate was 11.21/10,000, similar to the rate in developed countries.

Close to 36 thousand auxiliaries are working in the country, almost of them are trained informally by the dentists themselves, and acting as receptionists and chair-side auxiliaries. In the Public Health Programs for children, the employment of "Dental Hygiene Technicians" is always greater, who even make fillings of teeth prepared by the dentists.

Legislation doesn't forbid the training and use of Dental Operators (Dental Nurses) with expanded functions, but in practice the profession is able to maintain its privileges dominating the market.

The poorest groups, outside the public services, may look for treatment with the nearly 25 thousand "unqualified dentists", that charge more accessible prices, though their service is frequently of a lower quality.

The average age of dentists is 37. 61% are men, but the proportion of women is rising and may become the majority by 1990.

#### 6. DENTAL SCHOOLS (Table 12)

There are 66 Dental Schools in Brazil, with 5,208 new dentists graduating each year. Four new courses recently created, however, will make this number rise to 5,650 new professionals from 1984 onwards.

The Ministry of Education at present forbids the opening of new courses as well as the expansion of the

number of vacancies. This policy will probably continue, mainly considering the inability of the market to absorb more trained professional inside the existing social and economic structures.

The time allowed for each course is theoretically a minimum of 6 and a maximum of 16 semesters (in a credit system), but the great majority maintain with little flexibility a standard course of 4 years (average length of 8.4 semesters).

#### 7. EXPENDITURE ON GENERAL HEALTH AND ON DENTAL CARE (Table 13)

The public service contracts, directly or indirectly, nearly 25% of the Dentist/hours available, but is responsible for only 18% of odontological expenditure.

In reality, in face of the lack of efficient and sufficient public services, people are forced to pay with they own resources for the odontological services that they need; the contrary of what happens with medical services, which are provided basically on a social basis (through the social insurance, for example).

From the total of 1.08 thousand million dollars spent in 1981 on dental care, only 3.0 million dollars (less than 0.3%) was used for water fluoridation.

The greater participation of the States in public odontological expenditures, is due to the presence of specific programs developed by the Secretary of Education for 1<sup>st</sup> grade students (6-14 years-old).

In 1981, the total expenditure on health (US\$ 10 thousand million) represented 3.8% of the Gross National Product -GNP, while the expenditure on dental care represented 0.4% of the GNP.



## 8. DENTAL CARE STRUCTURE

The actual model of odontological services in Brazil consists of two large sectors:

- a. private sector
  - a1. formal sub-sector (Dentists)
  - a2. informal sub-sector (unqualified practitioners)
- b. public sector
  - b1. federal
  - b2. state
  - b3. municipal

The main characteristics are: strong predominance of the formal private sector, principally represented by the individual practice clinic; significant participation of the private informal sector in relation to low income groups; the growing role of the public sector; strong therapeutic emphasis; use of sophisticated technology and auxiliaries without formal training.

The public sector in the odontological area finds itself fundamentally under the responsibility of the social security system (social security completes nearly 40 million odontological appointments per year).

Only this year, the Ministry of Health created a working group with the duty of establishing professional standards on dental care. There is no central coordination in relation to the work of these different institutions. Though there are for each State organized sectors of odontology, either under the Secretary of Health or under the Secretary of Education.

However, the introduction of services with clear innovative characteristics (for example, the Integrated Program of School Health created by Sergio Pereira, from the Secretary of Education of the Federal District in Brasilia) and the introduction of university courses with syllabuses more directed to the



national reality, means that the direction of the Brazilian Odontology policy is beginning - at least qualitatively - to change.

#### 9. BASIC SERVICES IN ODONTOLOGY (Proposed Program)

With the objective of expanding dental care and reducing the incidence of more prevalent problems, the oral health policies at present suggested for introduction in Brazil as a part of the general program of basic health services, are based in the general spread of a minimum level of care, incorporating gradually more complex problems.

These are the guidelines for a comprehensive dental care program:

- greater priority for the prevention of dental caries from the child's birth; for the treatment of the age groups from 6 to 14 years; and for low income groups and areas of greatest economic difficulty;

- maximum simplification of inputs, by national production of equipment and materials of low technological density, minimum cost and adequate qualitative standards, assured the custom of the public sector;

- usage of four types of human resources:
  - a) Dentist-Surgeons- b) Dental Hygiene Technicians, being able to perform routine dental fillings and emergency services under supervision - c) Dental Auxiliaries - d) Aides, who are general health auxiliaries with a minimum knowledge of odontology (elementary care);

- regionalization of care, based on a greater amplitude of services considered essential and in differentiation by areas, beginning with the urban periphery and the rural areas to the most dense population centers.

The dental care should consequently be built in six blocks of activities:

- Mass Prevention - with emphasis placed on the water's fluoridation in cities with over five thousand inhabitants, that already have a public water supply;
- Elementary Care - minimum care performed by local multi-purposed human resources (Aides), available for all;
- Support Activities - carried out by existing health centers, which add to their normal responsibilities (attention to free demand) supervision of the elementary level of care, and giving care to patients referred from Aides;
- Attention to Lower School Students - covering of enrolled students from 1<sup>st</sup> grade public schools through the "Incremental System";
- Reference For Complex Cases - rationalization of the present services in Universities and more complex health centers, with a view to covering people referred by the preceding levels under social criteria;
- Non Profit Offer of Prothesis - prothesis service expansion with expenses defrayed by consumers at prices equivalent to the production costs.

It can be forecasted that if the current number of university courses be maintained, new dentists will graduate at best at the same rate as population growth. The necessary auxiliary and technical personnel should be trained preferably by the health public centers themselves.

-X-X-X-X-X-X-X-X-



TABLE 1 - BRAZIL; PROJECTION OF THE TOTAL POPULATION, BY  
QUINQUENNIAL AGE GROUPS - 1960 - 2020

AGE GROUPS	TOTAL POPULATION						
	1960	1970	1980	1990	2000	2010	2020
TOTAL	70 070 457	93 139 037	119 070 865	149 102 579	182 515 523	219 566 845	261 112 512
0-4	11 169 093	13 811 806	16 927 691	19 593 387	22 105 746	25 206 159	28 869 913
5-9	10 151 172	13 459 508	15 426 177	17 912 140	20 545 506	23 292 023	26 787 963
10-14	8 534 605	11 859 119	14 894 004	16 485 875	19 239 372	21 824 845	24 971 234
15-19	7 169 876	10 253 283	13 126 741	15 257 937	17 703 869	20 419 624	23 139 766
20-24	6 243 540	8 285 805	11 214 585	14 102 694	16 328 832	19 030 272	21 685 596
25-29	5 227 185	6 504 069	9 480 260	12 871 964	15 030 183	17 565 262	20 235 111
30-34	4 504 537	5 664 940	7 857 701	10 920 045	13 809 877	16 090 263	18 834 445
35-39	3 958 323	5 089 312	6 261 361	9 156 782	12 511 885	14 638 955	17 227 323
40-44	3 233 194	4 535 592	5 426 895	7 521 080	10 510 091	13 391 560	15 621 610
45-49	2 710 046	3 540 685	4 572 072	5 902 013	8 692 416	11 966 339	14 112 770
50-54	2 156 644	2 940 357	3 987 484	5 015 986	7 002 323	9 858 506	12 623 243
55-59	1 587 230	2 283 375	3 219 790	4 110 217	5 345 349	7 926 327	11 000 917
60-64	1 397 415	1 791 127	2 445 973	3 445 061	4 366 484	6 147 844	8 732 033
65-69	783 178	1 216 510	1 942 433	2 623 239	3 374 738	4 435 230	6 641 906
70-74	625 694	928 295	1 292 799	1 827 787	2 504 526	3 315 444	4 725 259
75-79	369 219	562 276	875 303	1 284 934	1 745 940	2 261 528	3 002 075
80 AND +	249 506	401 978	709 596	1 061 438	1 541 296	2 195 658	2 905 846

TABLE 2 - BASIC INDICATORS - BRAZIL, 1970, 75 AND 80

INDICATOR	YEAR		
	1970	1975	1980
GNP per capita	491.5	1 229	2 049
Minimum Salary per month	38.5	59.2	74.8
External Debth (U\$ millions)	5 295	21 171	53 847
Urban Population - %	56	60	69
Literacy Rate - 10 Years more %	65.7	-	74.5



TABLE 3-AVERAGE NUMBER OF DMF-TEETH PER CHILD  
6-14 YEARS-OLD - BRAZIL - 1980

AGE- YEARS	NUMBER OF SUBJECTS	DMF - TEETH				
		$\bar{D}$	$\bar{F}$	$\bar{E}$	$\bar{IE}$	$\overline{DMF-T}$
6	11 112	1.39	0.10	0.03	0.12	1.64
7	40 667	2.23	0.18	0.07	0.08	2.56
8	37 852	2.29	0.85	0.09	0.16	3.39
9	35 840	2.74	1.01	0.05	0.18	3.98
10	35 091	2.86	1.16	0.34	0.38	4.74
11	32 280	3.37	1.40	0.63	0.52	5.92
12	28 923	4.22	1.78	0.78	0.47	7.25
13	24 972	4.90	2.70	0.75	0.81	9.16
14	20 143	4.95	2.98	1.54	0.47	9.94
TOTAL	266 880	3.16	1.28	0.42	0.34	5.20

SOURCES: Data from São Paulo state and the following others: BA - DF - ES - MG - PB - PI - RN - RS.

TABLE 4 - AVERAGE NUMBER OF DMF-TEETH, AND PROJECTION OF THE TOTAL NECESSITIES AND COSTS OF DENTAL CARE, BY AGE GROUPS, 6-59 YEARS -OLD - BRAZIL - 1980

AGE GROUPS	AVERAGE DMF-TEETH					$\bar{D} + \bar{IE}$	POPULATION (Thousands)*	D + IE TOTAL (Thousands)	COST (*) (US\$ (Thousands))
	$\bar{D}$	$\bar{F}$	$\bar{E}$	$\bar{IE}$	$\bar{DMF-T}$				
6-14	3.16	1.28	0.42	0.34	5.20	3.50	26 532	92 862	742 896
15-19	7.54	2.21	3.07	1.68	14.50	9.22	13 127	121 031	968 247
20-29	5.92	2.60	8.68	1.70	18.90	7.62	20 695	157 696	1 261 567
30-39	5.11	1.85	12.26	2.14	21.36	7.25	14 129	102 435	819 482
40-49	3.90	1.32	16.78	2.71	24.71	6.61	9 999	66 093	528 747
50-59	1.81	0.25	23.73	0.70	26.49	2.51	7 207	18 090	144 717
TOTAL 6-59	-	-	-	-	-	-	91 689	558 207	4 465 656

(\*) US\$ 8 per tooth in Government services.



TABLE 5 - SOME PERIODONTAL DISEASE STUDIES IN BRAZILIAN POPULATION

AUTHOR	STUDIED POPULATION				AVERAGE INDEX	PREVALENCE (%)	PERIODONTAL POCKETS (%)
	TYPE	NUMBER	AGE-GROUP	INDEX			
Toledo, 1969	1st Grade Students	405	7-12	PMA	-	98.3	-
S. Sobrinho, 1965	"	100	14-17	PMA	6.25	-	-
Dzinham, 1968	"	240	6-12	PMA	-	97.9	-
Andrioni, 1969	"	448	7-13	PMA	-	100.0	-
Badeia Marcos,...	"	1 100	7-11	PI	0.31	61.0	1.0
Badeia Marcos, 1977	"	875	6-14	PI	0.40	90.0	4.0
S.Sobrinho, 1965	Soldiers	377	18-19	PMA	2.50	-	-
S.Sobrinho, 1965	"	138	21-50	PMA	4.15	-	-
Badeia Marcos, 1979	School Dental Students	332	15-34	PI	0.32	88.7	2.1
S.Sobrinho, 1965	General Population	85	15-50	PMA	6.35	-	-
Badeia Marcos, 1977	Rural Population	123	5-14	PI	0.80	91.0	10.0
			15 +	PI	2.20	100.0	45.0

Source: Badeia Marcos.

# BRASIL

HOMEM MALE	%
Pele .....	28,9
Skin .....	
Estômago .....	10,6
Stomach .....	
Boca .....	8,5
Mouth .....	
Próstata .....	6,0
Prostate .....	
Intestino grosso .....	4,3
Large intestine .....	
Esôfago .....	4,3
Esophagus .....	
Laringe .....	4,2
Larynx .....	
Bexiga urinária .....	3,8
Urinary bladder .....	
Traquéia, brônquio e pulmão .....	3,8
Trachea, bronchus and lung .....	
Gânglios linfáticos .....	3,5
Lymph nodes .....	
Outras .....	22,1
Others .....	



## POPULAÇÃO (POPULATION):

Homens (males) 59.134.605 hab  
Mulheres (females) 59.526.865 hab  
Total 118.661.470 hab

AREA: 8.511.565 km<sup>2</sup> (100,02)

DENSIDADE (DENSITY): 14,03 hab/km<sup>2</sup>

MULHER FEMALE	%
Colo do útero .....	23,7
Cervix uteri .....	
Pele .....	23,4
Skin .....	
Mama .....	16,5
Breast .....	
Intestino grosso .....	4,3
Large intestine .....	
Estômago .....	3,9
Stomach .....	
Corpo do útero .....	3,0
Corpus uteri .....	
Boca .....	2,3
Mouth .....	
Ovário .....	1,8
Ovary .....	
Gânglios linfáticos .....	1,7
Lymph nodes .....	
Tireóide .....	1,7
Thyroid .....	
Outras .....	17,7
Others .....	

## REGIÃO NORTE NORTH REGION

HOMEM MALE	%
Pele .....	31,3
Skin .....	
Estômago .....	16,6
Stomach .....	
Boca .....	7,1
Mouth .....	
Pênis .....	5,3
Penis .....	
Próstata .....	4,7
Prostate .....	
Laringe .....	4,1
Larynx .....	
Intestino grosso .....	3,2
Large intestine .....	
Gânglios linfáticos .....	3,1
Lymph nodes .....	
Traquéia, brônquio e pulmão .....	2,8
Trachea, bronchus and lung .....	
Bexiga urinária .....	2,7
Urinary bladder .....	
Outras .....	19,1
Others .....	



## POPULAÇÃO (POPULATION):

Homens (males) 2.997.337 hab  
Mulheres (females) 2.995.265 hab  
Total 5.992.602 hab

AREA: 3.581.180 km<sup>2</sup> (42,072)

DENSIDADE (DENSITY): 1,66 hab/km<sup>2</sup>

MULHER FEMALE	%
Colo do útero .....	45,2
Cervix uteri .....	
Pele .....	16,3
Skin .....	
Mama .....	9,6
Breast .....	
Estômago .....	4,1
Stomach .....	
Boca .....	3,6
Mouth .....	
Intestino grosso .....	3,0
Large intestine .....	
Tireóide .....	1,3
Thyroid .....	
Ovário .....	1,3
Ovary .....	
Corpo do útero .....	1,2
Corpus uteri .....	
Vulva .....	1,1
Vulva .....	
Outras .....	13,3
Others .....	

## REGIÃO NORDESTE NORTHEAST REGION

HOMEM MALE	%
Pele .....	37,2
Skin .....	
Boca .....	9,7
Mouth .....	
Estômago .....	7,2
Stomach .....	
Pênis .....	5,7
Penis .....	
Próstata .....	5,6
Prostate .....	
Gânglios linfáticos .....	4,0
Lymph nodes .....	
Laringe .....	3,1
Larynx .....	
Intestino grosso .....	3,1
Large intestine .....	
Bexiga urinária .....	2,2
Urinary bladder .....	
Esôfago .....	2,1
Esophagus .....	
Outras .....	20,1
Others .....	



## POPULAÇÃO (POPULATION):

Homens (males) 17.053.468 hab  
Mulheres (females) 17.022.337 hab  
Total 34.075.805 hab

AREA: 1.548.672 km<sup>2</sup> (18,203)

DENSIDADE (DENSITY): 22,60 hab/km<sup>2</sup>

MULHER FEMALE	%
Colo do útero .....	36,1
Cervix uteri .....	
Pele .....	20,7
Skin .....	
Mama .....	15,1
Breast .....	
Boca .....	3,3
Mouth .....	
Intestino grosso .....	2,5
Large intestine .....	
Estômago .....	2,0
Stomach .....	
Corpo do útero .....	2,0
Corpus uteri .....	
Tireóide .....	1,7
Thyroid .....	
Ovário .....	1,7
Ovary .....	
Gânglios linfáticos .....	1,6
Lymph nodes .....	
Outras .....	13,3
Others .....	



... TABLE 6

REGIÃO CENTRO-OESTE  
CENTRAL-WEST REGION

HOMEM MALE	%
Pele .....	34,3
Skin .....	
Estômago .....	9,2
Stomach .....	
Próstata .....	8,4
Prostate .....	
Boca .....	5,5
Mouth .....	
Gânglios linfáticos .....	5,3
Lymph nodes .....	
Intestino grosso .....	4,3
Large intestine .....	
Bexiga urinária .....	3,9
Urinary bladder .....	
Pênis .....	3,0
Penis .....	
Larínge .....	3,2
Larynx .....	
Esôfago .....	2,5
Esophagus .....	
Outras .....	19,6
Others .....	



## POPULAÇÃO (POPULATION):

Homens (males)	3.837.950 hab
Mulheres (females)	3.713.718 hab
Total	7.551.668 hab

AREA: 1.879.455 km<sup>2</sup> (22,082)DENSIDADE (DENSITY): 4,02 hab/km<sup>2</sup>

MULHER FEMALE	%
Colo do útero .....	36,3
Cervix uteri .....	
Pele .....	23,3
Skin .....	
Mama .....	12,0
Breast .....	
Estômago .....	2,9
Stomach .....	
Intestino grosso .....	2,7
Large intestine .....	
Tireóide .....	2,5
Thyroid .....	
Gânglios linfáticos .....	1,8
Lymph nodes .....	
Corpo do útero .....	1,7
Corpus uteri .....	
Ovário .....	1,6
Ovary .....	
Boca .....	1,5
Mouth .....	
Outras .....	13,7
Others .....	

REGIÃO SUDESTE  
SOUTHEAST REGION

HOMEM MALE	%
Pele .....	27,8
Skin .....	
Estômago .....	11,7
Stomach .....	
Boca .....	8,4
Mouth .....	
Próstata .....	5,9
Prostate .....	
Intestino grosso .....	4,6
Large intestine .....	
Larínge .....	4,3
Larynx .....	
Esôfago .....	4,3
Esophagus .....	
Traquéia, brônquio e pulmão .....	4,1
Trachea, bronchus and lung .....	
Bexiga urinária .....	4,0
Urinary bladder .....	
Gânglios linfáticos .....	3,4
Lymph nodes .....	
Outras .....	21,5
Others .....	



## POPULAÇÃO (POPULATION):

Homens (males)	25.729.142 hab
Mulheres (females)	26.627.222 hab
Total	51.356.364 hab

AREA: 974.935 km<sup>2</sup> (10,852)DENSIDADE (DENSITY): 56,30 hab/km<sup>2</sup>

MULHER FEMALE	%
Pele .....	24,3
Skin .....	
Colo do útero .....	19,6
Cervix uteri .....	
Mama .....	17,4
Breast .....	
Intestino grosso .....	4,8
Large intestine .....	
Estômago .....	4,7
Stomach .....	
Corpo do útero .....	3,4
Corpus uteri .....	
Boca .....	2,2
Mouth .....	
Ovário .....	1,8
Ovary .....	
Gânglios linfáticos .....	1,8
Lymph nodes .....	
Tireóide .....	1,6
Thyroid .....	
Outras .....	18,4
Others .....	

REGIÃO SUL  
SOUTH REGION

HOMEM MALE	%
Pele .....	25,8
Skin .....	
Estômago .....	9,0
Stomach .....	
Boca .....	8,8
Mouth .....	
Próstata .....	6,2
Prostate .....	
Esôfago .....	6,2
Esophagus .....	
Larínge .....	4,5
Larynx .....	
Traquéia, brônquio e pulmão .....	4,5
Trachea, bronchus and lung .....	
Intestino grosso .....	4,3
Large intestine .....	
Bexiga urinária .....	4,3
Urinary bladder .....	
Gânglios linfáticos .....	3,1
Lymph nodes .....	



## POPULAÇÃO (POPULATION):

Homens (males)	9.530.268 hab
Mulheres (females)	9.155.237 hab
Total	18.685.505 hab

713 km<sup>2</sup> (16,728)DENSIDADE (DENSITY): 26,32 hab/km<sup>2</sup>

MULHER FEMALE	%
Pele .....	23,3
Skin .....	
Colo do útero .....	17,1
Cervix uteri .....	
Mama .....	17,1
Breast .....	
Intestino grosso .....	5,1
Large intestine .....	
Estômago .....	3,1
Stomach .....	
Corpo do útero .....	3,1
Corpus uteri .....	
Ovário .....	2,1
Ovary .....	
Esôfago .....	1,1
Esophagus .....	
Boca .....	1,1
Mouth .....	
Gânglios linfáticos .....	1,1
Lymph nodes .....	

TABLE 7

Distribuição percentual dos diagnósticos de câncer primário segundo sexo, grupos etários e as dez localizações mais frequentes (Brasil 1976-80)  
 Percentual distribution of primary cancer diagnoses according to sex, age groups and the ten most frequent sites (Brazil 1976-80)

## 0 - 14 ANOS

HOMEM MALE	%
Gânglios linfáticos .....	28,9
Lymph nodes	
Encéfalo .....	9,3
Brain	
Ossos e articulações .....	7,9
Bones and joints	
Olho .....	7,6
Eye	
Rim .....	6,2
Kidney	
Tecidos moles .....	5,8
Soft tissues	
Pele .....	5,4
Skin	
Intestino delgado .....	2,7
Small intestine	
Testículo .....	2,4
Testis	
Sistema hematopoético .....	2,3
Hematopoietic system	
Outras .....	21,5
Others	

MULHER FEMALE	%
Gânglios linfáticos .....	14,0
Lymph nodes	
Ossos e articulações .....	10,1
Bones and joints	
Encéfalo .....	9,8
Brain	
Olho .....	9,5
Eye	
Rim .....	9,3
Kidney	
Pele .....	6,6
Skin	
Tecidos moles .....	6,5
Soft tissues	
Ovário .....	3,6
Ovary	
Supra-renal .....	3,0
Supra-renal	
Sistema hematopoético .....	2,1
Hematopoietic system	
Outras .....	25,5
Others	

## 15 - 44 ANOS

HOMEM MALE	%
Pele .....	26,6
Skin	
Gânglios linfáticos .....	8,9
Lymph nodes	
Boca .....	8,9
Mouth	
Estômago .....	8,3
Stomach	
Intestino grosso .....	4,8
Large intestine	
Ossos e articulações .....	3,7
Bones and joints	
Testículo .....	3,3
Testis	
Tecidos moles .....	2,9
Soft tissues	
Faringe .....	2,8
Pharynx	
Esôfago .....	2,6
Esophagus	
Outras .....	27,2
Others	

MULHER FEMALE	%
Colo do útero .....	39,3
Cervix uteri	
Mama .....	17,9
Breast	
Pele .....	13,3
Skin	
Tireóide .....	3,1
Thyroid	
Intestino grosso .....	2,7
Large intestine	
Gânglios linfáticos .....	2,6
Lymph nodes	
Estômago .....	2,3
Stomach	
Ovário .....	2,2
Ovary	
Tecidos moles .....	1,3
Soft tissues	
Ossos e articulações .....	1,2
Bones and joints	
Outras .....	14,1
Others	

TABLE 7

Distribuição percentual dos diagnósticos de câncer primário segundo sexo, grupos etários e as dez localizações mais frequentes (Brasil 1976-80)  
 Percentual distribution of primary cancer diagnoses according to sex, age groups and the ten most frequent sites (Brazil 1976-80)

## 45 - 64 ANOS

HOMEM MALE	%
Pele .....	28,1
Skin .....	
Estômago .....	11,8
Stomach .....	
Boca .....	10,1
Mouth .....	
Esôfago .....	5,8
Esophagus .....	
Laringe .....	5,6
Larynx .....	
Traquéia, brônquio e pulmão .....	5,0
Trachea, bronchus and lung .....	
Intestino grosso .....	4,0
Large intestine .....	
Faringe .....	3,8
Pharynx .....	
Bexiga urinária .....	3,5
Urinary bladder .....	
Próstata .....	2,9
Prostate .....	
Outras .....	19,4
Others .....	

MULHER FEMALE	%
Colo do útero .....	23,6
Cervix uteri .....	
Pele .....	21,8
Skin .....	
Mama .....	18,7
Breast .....	
Intestino grosso .....	4,4
Large intestine .....	
Corpo do útero .....	4,0
Corpus uteri .....	
Estômago .....	4,0
Stomach .....	
Boca .....	2,2
Mouth .....	
Ovário .....	1,8
Ovary .....	
Tireóide .....	1,3
Thyroid .....	
Esôfago .....	1,3
Esophagus .....	
Outras .....	10,7
Others .....	

## 65 ANOS E MAIS

HOMEM MALE	%
Pele .....	32,0
Skin .....	
Próstata .....	11,7
Prostate .....	
Estômago .....	11,0
Stomach .....	
Boca .....	8,2
Mouth .....	
Bexiga urinária .....	5,0
Urinary bladder .....	
Intestino grosso .....	4,5
Large intestine .....	
Esôfago .....	3,6
Esophagus .....	
Laringe .....	3,6
Larynx .....	
Traquéia, brônquio e pulmão .....	3,5
Trachea, bronchus and lung .....	
Pênis .....	2,1
Penis .....	
Outras .....	14,8
Others .....	

MULHER FEMALE	%
Pele .....	36,2
Skin .....	
Mama .....	12,4
Breast .....	
Colo do útero .....	10,5
Cervix uteri .....	
Estômago .....	5,9
Stomach .....	
Intestino grosso .....	5,9
Large intestine .....	
Boca .....	3,9
Mouth .....	
Corpo do útero .....	3,7
Corpus uteri .....	
Vulva .....	1,9
Vulva .....	
Bexiga urinária .....	1,6
Urinary bladder .....	
Esôfago .....	1,5
Esophagus .....	
Outras .....	16,5
Others .....	



TABLE 8 - CITIES AND POPULATION WITH WATER FLUORIDATION, BY REGION - BRAZIL, 1972 - 1977 AND 1982

REGION	CITIES TOTAL NUMBER	Y E A R							
		1972		1977		1982			
		Cities	Population (Thousands)	Cities	Population (Thousands)	Cities	% of the Total Cities	Population (Thousands)	% of the Total Population
NORTH	166	-	-	2	485	7	4.2	1 667	27.5
NORTHEAST	1 378	11	430	54	1 989	83	6.0	6 204	16.6
SOUTHEAST	1 412	33	1 480	57	3 279	216	15.3	11 867	22.0
SOUTH	727	30	979	120	4 308	134	18.4	4 210	21.2
CENTRAL-WEST	353	2	450	2	711	4	1.1	1 809	23.2
BRAZIL	4 036	235	3 339	235	10 772	444	11.0	25 757	20.8

Sources: Buendia, O.  
Grinplastch, S.

TABLE 9

PROJECTED NUMBER OF DENTISTS, RATE PER 10 000 INHABITANTS AND POPULATION  
PER DENTIST - BRAZIL - 1960/2 020

YEAR	TOTAL POPULATION (thousands)	DENTISTS		
		NUMBER	RATE/10 000	POPULATION/DENTIST
1960	70 191	23 000	3.28	3 052
1970	93 139	34 000	3.65	2 739
1976	107 918	40 929	3.79	2 637
1977	110 605	46 490	4.20	2 379
1978	113 577	49 456	4.35	2 297
1979	116 179	56 284	4.84	2 064
1980	119 071	61 067	5.13	1 950
1981	121 509	66 970	5.51	1 814
1990	149 103	117 120	7.85	1 273
2000	182 513	173 620	9.51	1 051
2010	219 566	230 120	10.48	954
2020	261 112	286 620	10.98	911

TABLE 10 - EXISTING DENTAL CARE PERSONNEL  
- BRAZIL - 12/81

TYPE	NUMBER	MALE %	AVERAGE AGE YEARS
Dentist	66 790	61	37,7
Therapists ("Dental Nurses")	-	-	-
Auxiliaries <sup>/1</sup>	36 164	08	...
Protesis Technicians <sup>/2</sup>	3 080	...	...
Unqualified Practitioners <sup>/1</sup>	2 500	...	...

<sup>/1</sup> : Estimated number

<sup>/2</sup> : Protesis Technicians Inscribed on the National Dental Council

TABLE 11 - BRAZILIAN DENTISTS, BY AGE GROUPS

AGE GROUP	DENTISTS (%)
- 25	1.3
26 - 30	17.6
31 - 35	24.8
36 - 40	18.3
41 - 45	12.4
46 - 50	9.6
51 - 55	5.7
56 - 60	2.6
61 - 65	4.1
66 - 70	2.6
+ 70	1.0
TOTAL	100.0

Source: Edler, P.



TABLE 12 - BASIC DATA ON DENTAL SCHOOLS - BRAZIL, 1981

INFORMATION	NUMBER
1. Dental Schools	66
2. Graduating students per year	
a. 1981	5 208
b. 1984 and up	5 650
3. Enrolled students - total	25 500
4. Number of vacancies	5 605
5. Average number of vacancies per course	85
6. Average length of courses	8.4 semesters
7. New schools planned	-
8. Schools scheduled for closure	-

TABLE 13 - ESTIMATED PUBLIC AND PRIVATE EXPENDITURES ON GENERAL HEALTH AND DENTAL CARE  
BRAZIL, 1981

SOURCES	EXPENDITURES (U\$ MILLIONS) *		(%)
	GENERAL HEALTH	DENTAL CARE	
1. <u>PUBLIC</u>	<u>6 155.10</u>	<u>196.60</u>	<u>3.19</u>
Ministry of Social Insurance	3 770.20	115.10	3.05
Ministry of Health	818.70	2.20	0.27
Other Federal Institutions	152.50	-	-
States and Municipalities	1 412.30	79.30	5.61
2. <u>PRIVATE</u>	<u>3 930.60</u>	<u>882.70</u>	<u>22.46</u>
Personal Expenditures	3 551.60	806.90	22.72
Institutional	379.00	75.80	20.00
3. <u>TOTAL</u>	<u>10 085.70</u>	<u>1 079.30</u>	<u>10.70</u>

(\*) 1 Dollar = 95,70 Cruzeiros in 1981.