RCG 0384

Epidemiologia – 2020

Modelos de estudos descritivos inquéritos e levantamentos

Afonso Dinis Costa Passos

DOIS GRANDES GRUPOS DE ESTUDOS:

- **DESCRITIVOS (Não testam hipóteses)**

- **ANALÍTICO (usados para testar hipóteses)**

ESTUDOS DESCRITIVOS

Tipos de estudos descritivos:

- **Relato de caso**
- **Relato de séries de casos**
- **Descrição de eventos em populações**
- **Descrição de técnicas, programas, cursos, etc.**
- **Estudos de correlação ou ecológicos**
- **Inquéritos e levantamentos**

ESTUDOS DESCRITIVOS

- **Relato de caso**

  Transmission of HCV, but not HIV, by human bite.
  Clin Infect Dis 1994;19:546-7

- **Relato de série de casos**

  Pneumocistis pneumonia in Los Angeles
  MMWR 1981;30(21):1-3

- **Eventos em populações**

  Epizootia de raiva na área urbana de Ribeirão Preto, SP, Brasil
  Cad Saúde Pública 1998;14(4):735-40

- **Descrição de técnicas, programas, cursos, etc.**

  Introduction to health: a new discipline for the early exposure of medical students to Public-health-related activities in Brazil.
  Academic Medicine 1997;72(5):440.

- **Estudos de correlação ou ecológicos**
- **Inquéritos e levantamentos**

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MMWR

Weekly

June 5, 1981 / 30(21);1-3

Epidemiologic Notes and Reports

Pneumocystis Pneumonia --- Los Angeles

In the period October 1980-May 1981, 5 young men, all active homosexuals, were treated for biopsy-confirmed *Pneumocystis carinii* pneumonia at 3 different hospitals in Los Angeles, California. Two of the patients died. All 5 patients had laboratory-confirmed previous or current cytomegalovirus (CMV) infection and candidal mucosal infection. Case reports of these patients follow.

Patient 1: A previously healthy 33-year-old man developed *P. carinii* pneumonia and oral mucosal candidiasis in March 1981 after a 2-month history of fever associated with elevated liver enzymes, leukopenia, and CMV viruria. The serum complement-fixation CMV titer in October 1980 was 256; in may 1981 it was 32.* The patient's condition deteriorated despite courses of treatment with trimethoprim-sulfamethoxazole (TMP/SMX), pentamidine, and acyclovir. He died May 3, and postmortem examination showed residual *P. carinii* and CMV pneumonia, but no evidence of neoplasia.

Patient 2: A previously healthy 30-year-old man developed *p. carinii* pneumonia in April 1981 after a 5-month history of fever each day and of elevated liver-function tests, CMV viruria, and documented seroconversion to CMV, i.e., an acute-phase titer of 16 and a convalescent-phase titer of 28* in anticomplement immunofluorescence tests. Other features of his illness included leukopenia and mucosal candidiasis. His pneumonia responded to a course of intravenous TMP/.SMX, but, as of the latest reports, he continues to have a fever each day.

Patient 3: A 30-year-old man was well until January 1981 when he developed esophageal and oral candidiasis that responded to Amphotericin B treatment. He was hospitalized in February 1981 for *P. carinii* pneumonia that responded to TMP/SMX. His esophageal candidiasis recurred after the pneumonia was diagnosed, and he was again given Amphotericin B. The CMV complement-fixation titer in March 1981 was 8. Material from an esophageal biopsy was positive for CMV.

Patient 4: A 29-year-old man developed *P. carinii* pneumonia in February 1981. He had had Hodgkins disease 3 years earlier, but had been successfully treated with radiation therapy alone. He did not improve after being given intravenous TMP/SMX and corticosteroids and died in March. Postmortem examination showed no evidence of Hodgkins disease, but *P. carinii* and CMV were found in lung tissue.

Patient 5: A previously healthy 36-year-old man with clinically diagnosed CMV infection in September 1980 was seen in April 1981 because of a 4-month history of fever, dyspnea, and cough.

On admission he was found to have *P. carinii* pneumonia, oral candidiasis, and CMV retinitis. A complement-fixation CMV titer in April 1981 was 128. The patient has been treated with 2 short courses of TMP/SMX that have been limited because of a sulfa-induced neutropenia. He is being treated for candidiasis with topical nystatin.

The diagnosis of *Pneumocystis* pneumonia was confirmed for all 5 patients antemortem by closed or open lung biopsy. The patients did not know each other and had no known common contacts or knowledge of sexual partners who had had similar illnesses. Two of the 5 reported having frequent homosexual contacts with various partners. All 5 reported using inhalant drugs, and 1 reported parenteral drug abuse. Three patients had profoundly depressed *in vitro* proliferative responses to mitogens and antigens. Lymphocyte studies were not performed on the other 2 patients.

Reported by MS Gottlieb, MD, HM Schanker, MD, PT Fan, MD, A Saxon, MD, JD Weisman, DO, Div of Clinical Immunology-Allergy; Dept of Medicine, UCLA School of Medicine; I Pozalski, MD, Cedars-Mt. Siani Hospital, Los Angeles; Field services Div, Epidemiology Program Office, CDC.

Editorial Note: *Pneumocystis* pneumonia in the United States is almost exclusively limited to severely immunosuppressed patients (1). The occurrence of pneumocystosis in these 5 previously healthy individuals without a clinically apparent underlying immunodeficiency is unusual. The fact that these patients were all homosexuals suggests an association between some aspect of a homosexual lifestyle or disease acquired through sexual contact and *Pneumocystis* pneumonia in this population. All 5 patients described in this report had laboratory-confirmed CMV disease or virus shedding within 5 months of the diagnosis of *Pneumocystis* pneumonia. CMV infection has been shown to induce transient abnormalities of *in vitro* cellular-immune function in otherwise healthy human hosts (2,3). Although all 3 patients tested had abnormal cellular-immune function, no definitive conclusion regarding the role of CMV infection in these 5 cases can be reached because of the lack of published data on cellular-immune function in healthy homosexual males with and without CMV antibody. In 1 report, 7 (3.6%) of 194 patients with pneumocystosis also had CMV infection' 40 (21%) of the same group had at least 1 other major concurrent infection (1). A high prevalence of CMV infections among homosexual males was recently reported: 179 (94%) had CMV viruria; rates for 101 controls of similar age who were reported to be exclusively heterosexual were 54% for seropositivity and zero fro viruria (4). In another study of 64 males, 4 (6.3%) had positive tests for CMV in semen, but none had CMV recovered from urine. Two of the 4 reported recent homosexual contacts. These findings suggest not only that virus shedding may be more readily detected in seminal fluid than urine, but also that seminal fluid may be an important vehicle of CMV transmission (5).

All the above observations suggest the possibility of a cellular-immune dysfunction related to a common exposure that predisposes individuals to opportunistic infections such as pneumocystosis and candidiasis. Although the role of CMV infection in the pathogenesis of pneumocystosis remains unknown, the possibility of *P. carinii* infection must be carefully considered in a differential diagnosis for previously healthy homosexual males with dyspnea and pneumonia.

References

1. Walzer PD, Perl DP, Krogstad DJ, Rawson G, Schultz MG. *Pneumocystis carinii* pneumonia in the United States. Epidemiologic, diagnostic, and clinical features. Ann Intern Med 1974;80:83-93.
2. Rinaldo CR, Jr, Black PH, Hirsh MS. Interaction of cytomegalovirus with leukocytes from patients with mononucleosis due to cytomegalovirus. J Infect Dis 1977;136:667-78.
3. Rinaldo CR, Jr, Carney WP, Richter BS, Black PH, Hirsh MS. Mechanisms of

Cad Saude Publica. 1998 Oct-Dec;14(4):735-40.

[Rabies epizootic in the urban area of Ribeirão Preto, São Paulo, Brazil].

[Article in Portuguese]

Passos AD[1], Castro e Silva AA, Ferreira AH, Maria e Silva J, Monteiro ME, Santiago RC.

Author information

Abstract

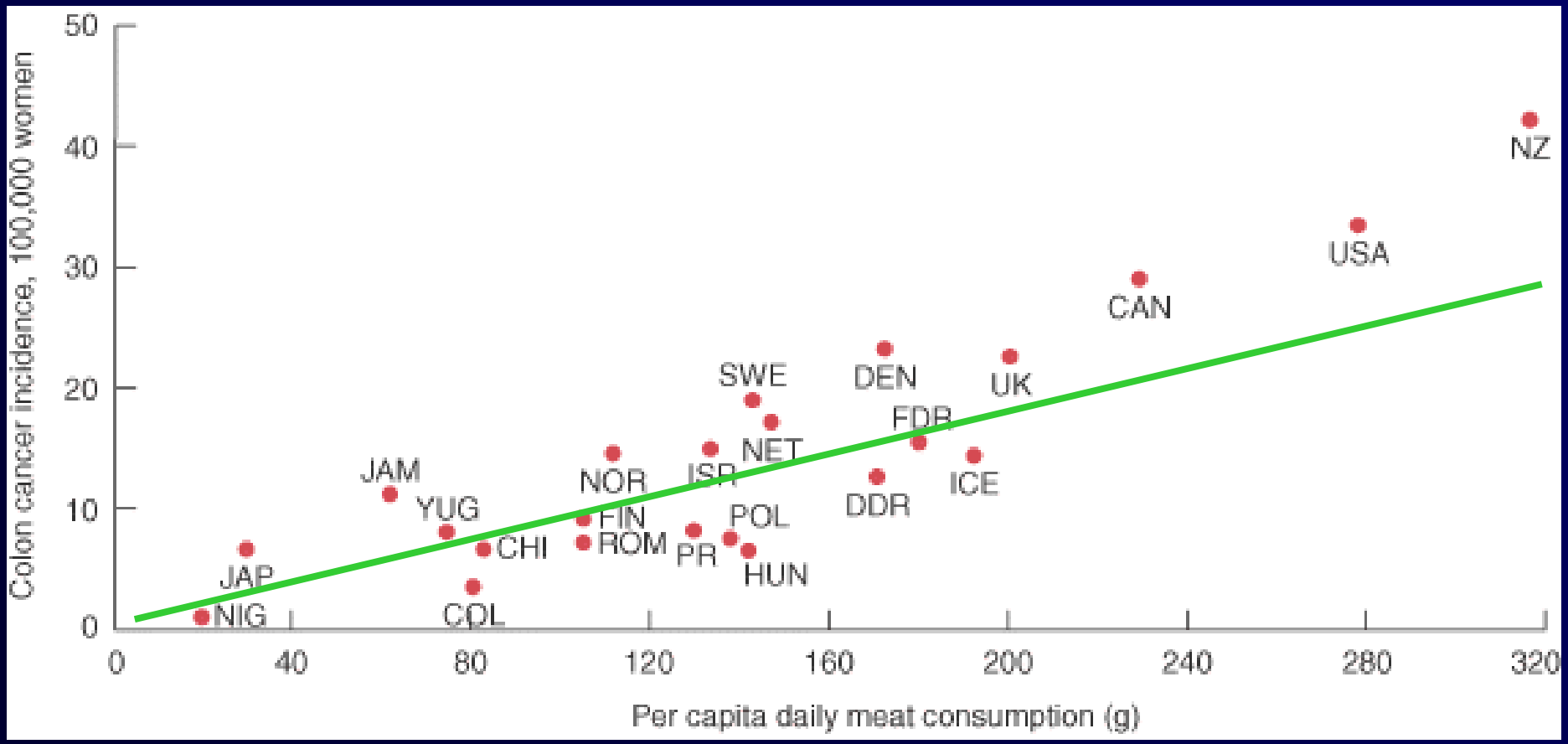
This report describes some epidemiological aspects of a rabies epizootic that started in 1995 in the urban area of Ribeirão Preto, SP, Brazil, and discusses its main causes. All laboratory confirmed cases were described according to a set of epidemiological variables. Simultaneously, information was raised concerning rabies vaccine coverage and epidemiological surveillance activities. In addition to one human case, 58 rabid animals were confirmed in 1995 (54 dogs, 3 cats. and 1 bat). There were 20 cases in 1996 (18 dogs and 2 cats). Geographical distribution was uneven in the city, with higher concentrations observed in the Western, Northern, and Southwestern sections, corresponding to the poorest areas. No seasonal variation was observed. The main reasons for the epizootic were low rabies vaccine coverage in animals and severe failures in epidemiological surveillance activities in the years immediately prior to 1995. This epizootic illustrates the risk of neglecting such activities, even in a city with a reasonably good health system, located in one of the most economically developed areas of the country. Vigorous preventive measures markedly reduced the number of cases.

PMID: 9878906

[Indexed for MEDLINE]

Exemplo de estudo ecológico ou de correlação:

Consumo de carne vermelha e incidência de câncer de colon



Levantamento:

Busca coletar de maneira sistematizada informações já existentes

exemplos:

- **revisão de prontuários médicos**
- **revisão de arquivos de consultórios ou unidades de saúde**

Inquéritos:

Busca coletar informações novas, ainda não disponíveis

exemplos:

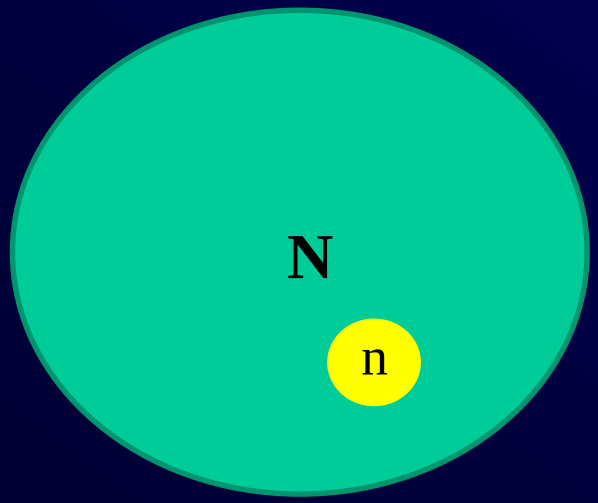
- **investigação da ocorrência de uma doença em um hospital**
- **investigação da ocorrência de uma doença na comunidade**

Metodologia

1) Objetivos

2) População de referência

3) População de estudo



População de referência

População de estudo

Representatividade → **generalização**

4) Cálculo do tamanho amostral

Cálculo do tamanho amostral em levantamentos e inquéritos

Para estimar a prevalência de esquistossomose numa localidade com população igual a 3 mil pessoas, um investigador decidiu realizar um inquérito por amostragem. Outras localidades de características semelhantes têm apresentado prevalência entre 20% e 30%. Desejando que a estimativa do inquérito não difira mais do que 5% do valor populacional e usando um nível de confiança de 95%, qual seria o tamanho mínimo da amostra?

P = 30% **1 - P = 70%** **d = 5%** **α = 0,05**

$$n = Z_{\alpha}{}^{2} \frac{P(1-P)}{d^{2}}$$

$$n = 1{,}96^{2} \frac{30 \times 70}{5^{2}} = 323$$

$$\frac{323}{3000} = 0{,}108$$

$$\frac{n}{N} > 0{,}05$$

$$nf = \frac{n}{1 + \frac{n-1}{N}}$$

$$nf = \frac{323}{1 + \frac{323-1}{3000}} = 291{,}7$$

Cálculo do tamanho amostral em levantamentos e inquéritos

Para estimar a prevalência de esquistossomose numa localidade com população igual a 3 mil pessoas, um investigador decidiu realizar um inquérito por amostragem. Outras localidades de características semelhantes têm apresentado prevalência entre 20% e 30%. Desejando que a estimativa do inquérito não difira mais do que 2% do valor populacional e usando um nível de confiança de 95%, qual seria o tamanho mínimo da amostra?

P = 30% **1 - P = 70%** **d = 2%** **α = 0,05**

$$n = Z_{\alpha}{}^{2} \frac{P(1-P)}{d^{2}}$$

$$n = 1{,}96^{2} \frac{30 \times 70}{2^{2}} = 2.016$$

$$\frac{2016}{3000} = 0{,}67$$

$$\frac{n}{N} > 0{,}05$$

$$nf = \frac{n}{1 + \frac{n-1}{N}}$$

$$nf = \frac{2016}{1 + \frac{2016-1}{3000}} = 1.206$$

Como investigar?

5) Fontes das informações

6) Variáveis:

Característica de interesse medida em elementos da amostra ou da população

Indicadores das variáveis

meio pelo qual se sabe que a variável se altera

órgãos dos sentidos
instrumentos

sensibilidade, especificidade, valores preditivos

Idade? Tabagismo? Obesidade? Renda? Dor precordial?
Chagásico? Sexo? Nível socioeconômico? Alcoolismo?
Diarréia? Febre?

Como investigar?

7) Critérios de inclusão/exclusão

8) Plano amostral

Amostragem

a) Planos amostrais probabilísticos:

Usam mecanismos aleatórios de seleção de participantes. Todos os indivíduos da população têm alguma probabilidade de serem parte da amostra.

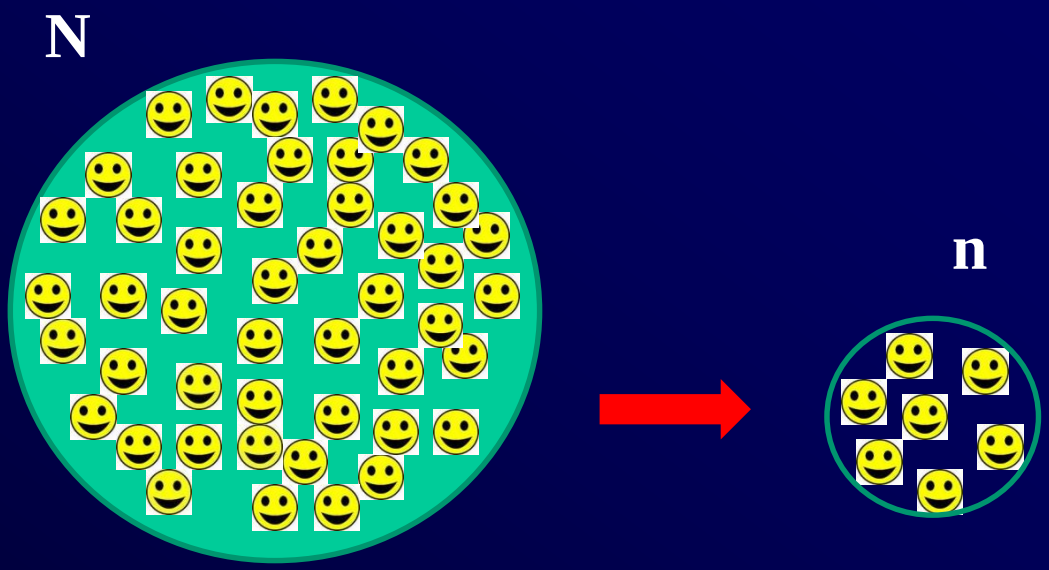
Amostra casual simples

Amostra estratificada

Amostra por conglomerados

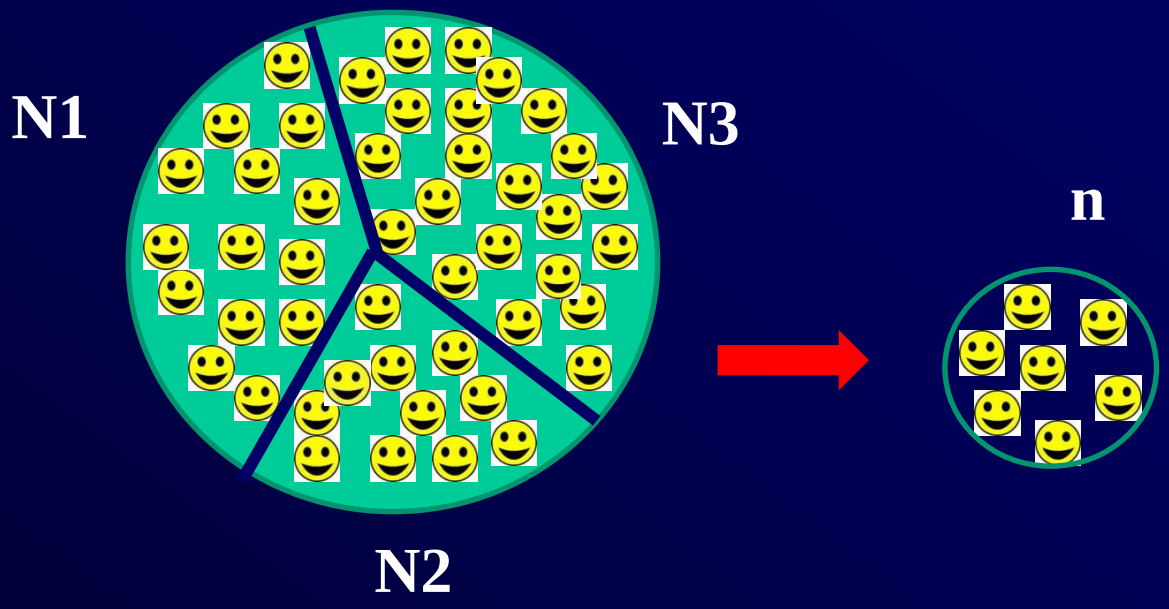
Amostra sistemática

Amostra casual simples



Todos os componentes de N têm igual probabilidade de serem escolhidos para a amostra (n)

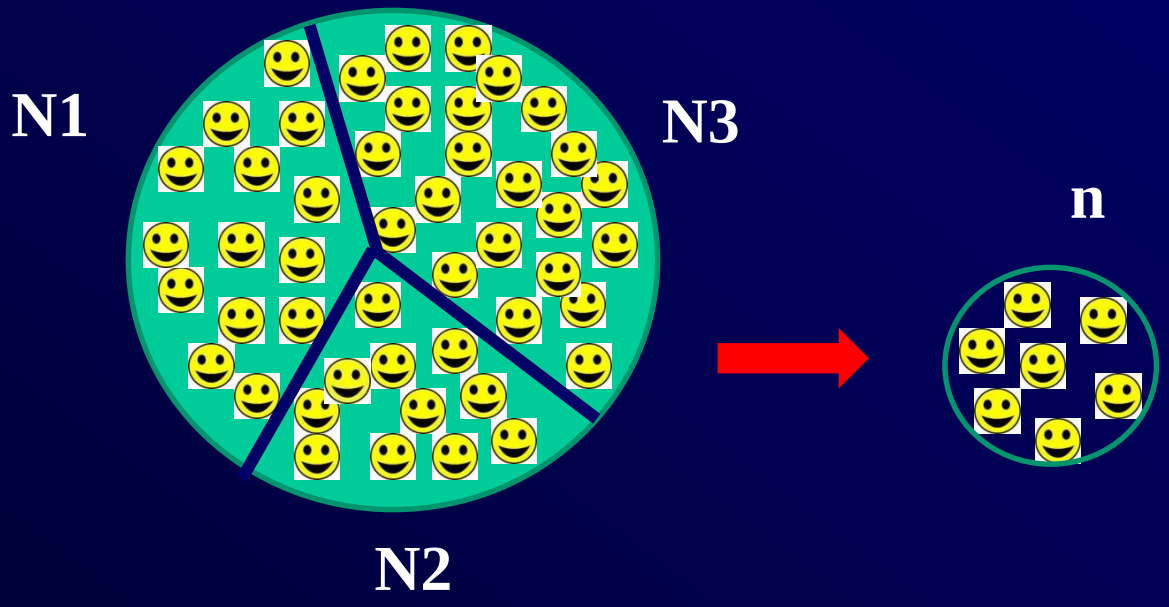
Amostra estratificada



Indivíduos de todos os estratos são sorteados aleatoriamente

Busca-se ter uma amostra representativa de todos os indivíduos, independentemente do estrato a que pertençam

Amostra estratificada



Exemplo de amostragem estratificada com partilha proporcional:

N1 = 300; **N2 = 250;** **N3 = 550;** **Total = 1.100:** **n = 400**

$$n1 = 400 \times \frac{300}{1100} = 109$$

$$n2 = 400 \times \frac{250}{1100} = 91$$

$$n2 = 400 \times \frac{550}{1100} = 200$$

Amostra por conglomerados

Conglomerado: agrupamento natural de indivíduos, em geral heterogêneo em relação à variável de interesse.

Os conglomerados são semelhantes entre si.

Amostragem em um estágio:

sorteiam-se alguns conglomerados e estudam-se todos os indivíduos dentro deles

Amostragem em dois estágios:

1º estágio: sorteiam-se os conglomerados.

2º estágio: amostragem aleatória de indivíduos

Amostra sistemática

1200 prontuários médicos ordenados por ordem alfabética, dos quais se deseja sortear uma amostra de 300 (portanto: 1 a cada 4)

1º passo: aleatoriamente, escolhe-se um número entre 1 e 4

2º passo: supondo que a escolha anterior tenha apontado o valor 3

os prontuários sorteados serão:

3, 7, 11, 15, 19, 23, 27, 31, 35....

b) Planos amostrais não probabilísticos:

Usam mecanismos não aleatórios de seleção de participantes.

- **Amostragem por conveniência**
- **Amostragem de voluntários**
- **Amostragem intencional**
- **Amostragem por cotas**

Como investigar?

7) Critérios de inclusão/exclusão

8) Plano amostral

9) Critérios de reposição de perdas

Passos a serem observados em levantamentos e inquéritos

1) Objetivos

2) População de referência

3) População de estudo

4) Cálculo do tamanho amostral

5) Fontes das informações

6) Variáveis e seus indicadores

7) Critérios de inclusão/exclusão

8) Plano amostral

9) Critérios de reposição de perdas