68

Vietnamese Studies

MEDICO-SANITARY WORK IN A VILLAGE

17th year
No. 68

Vietnamese
Studies

MEDICO-SANITARY WORK IN A VILLAGE

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Editorial Office:

46 TRAN HUNG DAO, HANOI

Distributor: XUNHASABA

32, HAI BA TRUNG, HANOI

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FOREWORD

The Public Health service in developing countries, particularly in their rural areas, is facing arduous problems. The economic and cultural level there is low, and the rate of morbidity and mortality is high, especially among women and children, while the medical personnel is insufficient and the health budget limited.

In these difficult conditions, what can be done to organise a country-wide health network hinged on preventive medicine, and to give care to the whole population, down to each worker, with the least expenses and the greatest efficacity?

What is to be done to apply and make efficacious the achievements of modern medicine in the countryside, to detect the possibilities and origins of diseases, apply methods of preventive medicine, so as to solve in a fundamental way problems of prophylaxis and protection of the health of farm workers?

The following monograph comprises two parts:

1. The experience of Phung Cong *village, situated in the heart of the Red River delta, which has developed a solid health network for more than ten years now and has waged a stubborn struggle to reduce the birth rate, clean the environment, vaccinate all the inhabitants, care for the health of mothers and children, and make full use of local medicinal plants.*

2. Health work carried out in this village by several specialized teams: pediatrics, internal medicine, obstetrics, phtisiology, biochemistry, medical bacteriology, and

radio-isotopes (nuclear medicine), so as to discover and step by step resolve problems concerning the health condition of and diseases affecting villagers, and thus create a model for developing a preventive medicine of a social nature for a rural area.

Stages of development of the health movement

DANG PHUONG KIET
DO VAN NHIEM

Phung Cong village (Chau Giang district, Hai Hung province) comprises five hamlets: Ben, Dao, Ngo, Khue and Thap.

Its inhabitants mainly live on an agricultural economy, although there is a market and a cluster of shops at the district centre.

In 1968 the village had 754 households totalling 3,363 inhabitants including 1,214 agricultural workers, living on an arable area of 896 *mau* (1 *mau* = 3 600 sq. metres), that is, an average of 0.26 *mau* (936 sq. metres) per capita.

Under the colonial regime, 100 landless families had to leave for other areas to earn their living, or had gone to serve as "coolies" in rubber plantations in South Vietnam. In 1945, several dozen people died of starvation, and some families became extinct. The village then had few rice-fields, and very small dwelling houses Numerous families, from generation to generation, had barely one or two square metres of housing space, and sometimes did not have even a tiny plot of land on which to build a hut. The village lanes, less than one metre wide, were sinuous, muddy and dirty.

By contrast, there were in the village no fewer than 30 places of worship, not counting pagodas, and

meeting halls, and superstitious customs and habits contrary to all rules of hygiene were rife.

Following the land reform of 1955, the village set up mutual-aid teams for agricultural production. In 1958, the district built a low-level cooperative in Thap hamlet then in the other hamlets of the village. In 1964 the two co-operatives of Khue and Thap hamlets were merged into a high-level co-operative, which became a prototype for the whole district, and beginning in 1967, all the hamlet-size co-operatives were merged into a high-level, village-scale co-operative.

1954 – 1964 Period

During the first War of Resistance (1946 1954), Phung Cong was part of the region held by French troops, and at the re-establishment of peace in 1954, endemic diseases were frequent, with sometimes, redoubtable epidemics.

Every year, on the 12th day of the 4th lunar month, the village organised ceremonies to implore "safety" from Heaven. Following these festivals, a diarrhoea epidemic often broke out, causing hundreds of people to fall ill and killing dozens of them, as a result of eating fly-spoilt meat and rice.

There was no toilet in the village, its inhabitants having the habit of relieving themselves in paddy fields. Drinking water came from stagnant ponds which gathered filthy water from surrounding areas, or from a few unsanitary wells with very low curbs. There was no public health station, nor any health worker. In 1943 – 44, a cholera epidemic

had broken out, taking a toll of a hundred victims most of them young people.

Trachoma was very frequent for the villagers washed their faces with soiled water from the ponds. Some families had as many as three blind members as a result of untreated eye lesions. Seriously ill people, unable to get hospitalised in the towns, were reduced to imploring the protection of various deities. In 1954, there were 11 blind persons and 1,000 people affected by trachoma in the village. Phung Cong people did nol eat their fill, had no warm-clothes and no blankets in the cold season, no mosquito nets, and no money to get medical care when they fell ill.

In 1947, under the French occupation, the whole district had only one first-aid station, set up at its capital and put in the charge of a male nurse with barely three months' training, and a private maternity home. In 1949, collaborators of the French set up a little medical post in Dai hamlet, mostly reserved for members of their families and those of land-owners. It was run by veterinaries who knew nothing about human pathology and were ignorant of the most elementary medical techniques. Hundreds of people suffered from tuberculosis; others were affected by elephantiasis caused by filarial worms, leprosy and small-pox. Poliomyelitis became a disquieting problem for all parents.

Following the land reform, Phung Cong became a commune; a public health unit was set up with a three-member staff comprising the leader of the unit, a male nurse who was concurrently assistant

pharmacist, and a midwife who was also in charge of first-aid cases. However, serious emergencies sometimes resulte ' in death for failing to receive the necessary intensive competent care.

The communal budget, insufficient and limited, could not ensure a regular monthly salary to the staff of the health unit, sometimes resulting in arrears of up to six months. However, during that period of 1957-65, those medical personnel worked with self-denial. In spite of their insufficient competence and the poor material and technical conditions, thanks to their dedication they obtained a number of positive results which paved ihe way for further development.

The administrative committee of the commune reserved for the health unit a five-bay brick house formerly owned by a big landlord, with some furniture and household utensils (tables, chairs, beds, cooking pots...) confiscated from other land-owners. Shortly after, the unit moved to a larger house. However, the equipment and medical means remained quite insufficient: the child-delivery table was shabby and, due to lack of enemas, bottles of water were used in the delivery room.

During cold winter nights the midwives themselves had to go and fetch firewood to heat the room for mothers and newborns.

Hygiene and prophylaxis

Acting upon the motto "Clean Village, Lush Fields", a movement was launched in 1955 againh the bad habit of defecating in the fields and for eacst

family to build a cesspool in its garden. Good results were obtained although the cesspools were still badly built and the standards of hygiene were not fully observed especially in overpopulated hamlets. Most of those latrines had no roof, but they nonetheless helped make the village cleaner than before.

In Ben hamlet, the lanes were divided into many sections, each assigned to a group of roadside families and school-pupils for maintenance and cleaning, the hamlet chief acting as supervisor.

In the years 1959-1960 a mass movement dealing with "Excreta and Garbage" was launched, with the following objectives:

1. Maintaining collective wells up to the norms of hygiene; assigning different uses to the ponds: some were reserved for bathing, others for washing clothes, others for washing vegetables and rice, etc.

2. Human excreta to be discharged in cesspools and droppings of domestic animals to be dumped in pits and composted.

3. Digging public cesspools and installing garbage bins for individual families.

The movement for "Building a New-type Village" conducted in the years 1960-1964 strengthened the above drive while seeking to widen village roads and lanes and build new ones.

Dinh hamlet and the district centre, situated in Ben hamlet, on the bank of the Red River, were elected for pilot schemes.

The building and widening of lanes in the hamlets, which in some cases had to encroach on gardens

and hedges, required a long work of explanation and persuasion.

In 1961 Phung Cong became a pilot-village in the district of Chau Giang for having successfully tackled the work of building a "new-type village".

After ten years (1954-64), a number of results were obtained in the domain of public health:

	1954	1964
– Permanent health personnel at the station	3	5
– Permanent health cadres in hamlets	8	19
– Monthly budget (in *dong*)	0	200
– Health station housed in	Five-bay thatchroofed hut	Seven-room brick house
– Mass movement	Inexistent	Numerous cesspool toilets and wells with raised margins.

1965-1968 Period

Early in 1965 the Americans conducted intensive bombing raids on North Vietnam. The mass movement was now aimed at building a fighting village. All roads and lanes were lined with combat trenches.

Within a short period of time all the roads and lanes in the village were widened:

– Khuc Thap hamlet (1) with 5 roads totalling 2,000 metres

1. *Khuc* and *Thap* hamlets were merged into one.

– Dai hamlet – 6 – 2,200 –
– Ben – – 7 – 2,700 –
– Dao – – 3 – 1,500 –

The reinforced and widened health network comprised two echelons:

– *Echelon I.* Its role was to instruct and train stretcher-bearer teams in production units and guerilla groups, and also serving schools, kindergartens, infant classes, etc. At the same time Red Cross posts were set up in the various hamlets.

The whole village now had 200 stretcher-bearers formed into 23 teams.

In April 1965 the first Red Cross post was set up at the farming co-operative of Ben hamlet, and in fuly, in the remaining hamlets. All these posts began Junctioning regularly, opening at noon and in the evening: selling medicines, doing vaccinations, dressing wounds, training people in preventive medicine and hygiene, etc. Each post had a medical chest, set up with assistance from the co-operative and money lent by villagers. The latter also helped build reserves of medicaments for the various units:

– schools: 1,000 bags

– kindergartens and infant schools: 6 boxes

– guerilla groups: 6 boxes

Echelon II: Beginning in 1965 the health station became the centre for medical guidance to the whole village. It was divided into two wards to meet emergencies, receiving patients of the 1st echelon at the request of the wartime service. There was always one person on duty for the treatment of

patients and for giving intensive care to confined women in the evening.

In the building of a fighting village, the health service was part of the combat force, while actively taking part in production.

By mid-1967 the village had accomplished the drive for the "Three Sanitary Facilities: well (one for every three families), cesspool, and bath-room. In the meantime people organised a group of hygiene activists entrusted with the task of turning excreta and garbage into fertilizer, destroying animal and insect carriers of infectious diseases, helping in disease prevention and, when necessary, in the struggle against bacteriological warfare. Greater use was also made of local medicinal plants for the treatment of diseases: the station had grown 2 *sao* (720 sq.m) of medicinal plants and was distributing a number of locally-prepared medicines free of charge.

The administrative committee of the village focused its attention on the building of infant classes and small kindergartens so as to free women for work in the fields and at the same time provide better protection against war injuries for little children.

The health station had organised a course for training 16 health workers, capable of giving intensive care to the wounded in case of air-raids. An intensive care network was formed, comprising:

- 2 2nd-echelon wards with 2 medicine chests;
- 4 1st-echelon posts with 4 medicine chests; and
- 23 medicine kits.

Elderly people played a very active role in the digging of combat trenches, putting in 400 workdays and contributing 850 bamboos and 350 *dong* in cash.

As a result of intensive production and the fight against air-raids, the five bays of the former health station now became too crowded, and the whole cultural house of Dai hamlet had to be used. To build a four-room brick house for the maternity clinic, the people and health cadres of the village ent 3,000 *dong* as well as building materials.

Toward the end of 1967 the health station, reinforced by a traditional-medicine practitioner, set up a traditional-medicine chest and created a garden of medicinal plants. To begin with, private individuals lent instruments for the preparation of medicines as well as the necessary funds. After three years, this garden of 3 *sao* (about 1,000 sq.m) with 100 medicinal species had brought in 3,000 *dong*'s worth of materia medica.

In the search for and selection of medicinal plants, health cadres made great efforts in often dangerous circumstances caused by enemy bombing raids. The health station guided and helped 200 families to grow in their gardens 16 medicinal species selected by the Ministry of Public Health. In 1968 it set up a section for reducing fractures, led by a renowned traditional-medicine physician. This attracted numerous patients from distant places who came for a treatment exclusively consisting of manipulation of the parts and use of local medicinal plants. Revenue from this section contributed to paying the yearly expenses of the station.

Completion of the "Three Sanitary Facilities"

Cesspools: The double septic tank, which appeared during the first nation-wide Resistance as early as 1947 was the object of a systematic study after 1954. In 1960, Vietnamese health workers presented a report on this subject to the International Medical Conference in Manila. Then Nam Sach district (Hai Hung province) served as a pilot centre for the diffusion of a model of septic tank which gradually became popular in all of North Vietnam.

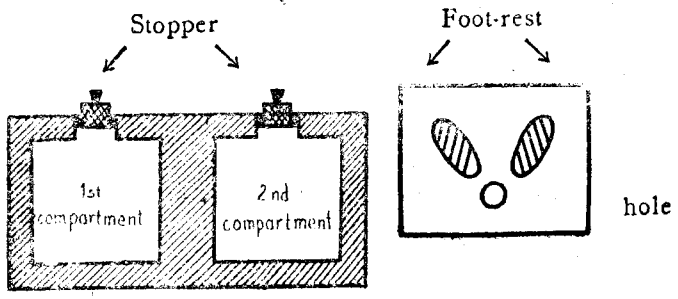
Such a cesspool comprises:

– 2 water-tight tanks separated by a median wall; total length 1.8 metres; width 1 metre; height 0.7 metre.

– A roofed structure made of brick or bamboo about 1.8 metres high.

– Each tank has a lid pierced with a hole 12 centimetres in diametre. Two bricks laid slantwise constitute a convenient footrest.

Urine does not fall into the tank but is channelled out. After defecation, the hole is covered with a small lid. One tank is used until it is filled up. It is then sealed and the excreta are left to ferment for several weeks, which destroys all microbes, parasites and cysts. Meanwhile, people use the second tank. After several weeks of fermentation the first tank is emptied through an opening about 40 cm high and 30 cm across. The excreta, made aseptic and odourless by this long fermentation, are used as manure.



Double septic tank

In 1965 Phung Cong began building double septic tanks. By then there were only 40 single-tank cesspools. The first double-tank cesspool was built by Mr. Vu Van Thoai, member of the standing committee of the Party organization. Other people, particularly health cadres, followed his example.

By December 1966, all the families in Ben hamlet had their own double-tank cesspools and by March 1967 a total of 587 pools had been built in the village.

Bath-rooms: Formerly people washed or took their bath in the open, exposed to cold, which was especially risky for aged people and children. There were no facilities for women even during their periods. Infection of the genito-urinary tract was thus frequent among them.

The village launched a movement for building small brick or plaited-bamboo structures to serve as bath-rooms, or using small spaces surrounded by thick hedges. The usual size is as follows:

– area: 1.2 × 1.4 metres.

– height: 1.8 metres

Ropes are to be stretched inside for hanging clothes.

The construction of those simple bath-rooms was completed in all the hamlets of the village by 1967.

Wells – Basing themselves on experience gained by inhabitants of the neighbouring district of My Hao, Phung Cong people made hollow cylinders with assembled bricks, then sank them end to end. The collective well of Thap hamlet is the first well with a raised margin in the village.

To supervise the building of these "Three Sanitary Facilities" the village set up a committee, headed by a member of the Party committee, assisted by two health cadres. The committee co-operated with local health cadres and a representative of the managing committee of the co-operative.

At the same time the village undertook

– A propaganda camgaign among the population for exchange of experiences and the granting of awards for the best achievements;

– The preparation of building materials and the organisation of a transport team;

– The organisation of a builders' brigade consisting of:

– 1 group for the construction of clay cesspools;

– 1 group for the construction of brick cesspools; and

– 1 group of carpenters for making woodwork for toilets and bath-rooms.

The "*Three Facilities*" movement brought the following results:

	1965	*1966*	*1967*	*1968*
Cesspools	38	234	584	596
Bath-rooms	0	3	169	382
Wells	23	43	81	87

In spite of the wartime scarcity of building materials, the health service of Phung Cong village was resolved to replace all former cesspools with double septic tanks before the rainy season of 1967 set in. The families that could not afford the necessary lime and bricks built wattle-and-clay cesspools which were solid and met the rules of hygiene. Within three months (February-April), the whole village had built 144 packed-clay cesspools thus fulfilling the plan.

The achievements in health work stimulated agricultural production, thus helping to increase crop yields. The Ministry of Public Health chose Phung Cong to be the site for the All North Vietnam Public Health Congress and the Government conferred on it a Labour Medal, Third Class.

Mother and child care

The first kindergarten was organised in Ben hamlet during working hours, with two women in charge and 11 to 16 children at the beginning. Later on, the co-operative provided lunch and the children were looked after in the daytime during the harvests. During the years 1967-1968, the existing kindergartens were further improved and the co-operative built

new ones using welfare funds. However, the activities of those day-nurseries were still limited.

The health station also organised teams respectively for aid to confined mothers, pre-natal care, examination and treatment of gynaecological affections, and encouragement to family planning.

The village obtained the following results during the years 1966-1968:

	1966	1967	1968
– Team for aid to confined mothers	14	14	23
– Pre natal examinations	154	148	238
– Deliveries	48	83	117
– Kindergartens	2	8	9
– Number of children admitted	28	137	148

Organisation of sanitation teams

The first such group, comprising one male nurse and a few elderly women, was set up in Ben hamlet. It had a hand-cart, safety equipment, and working implements. Its daily work consisted in cleaning the roads, collecting excreta and garbage, dredging gutters and ditches, and see to the proper maintenance and utilisation of double septic tanks. As a result of good distribution of tasks, help from the co-operative, and improvement of working conditions, beginning in December 1967 other sanitation groups were set up in all hamlets.

1969-1972 Period

Relying on results obtained during the previous year in the building of grass-roots units and cadre training and with the support of the population, the health service made visible progress in the years 1969–1972.

Examination and treatment of patients

Commendable and successful efforts were made particularly in the reduction and holding in place of fractures (1). This contributed to winning the trust of the people for the health-care service.

Activities from 1969 to 1972

	1969	1970	1971	1972
– Number of patients examined	2,570	3,689	2,219	2,077
– Cases treated with local medicinal plants	1.200	5.748	9.420	6,921
– Cases of hospitalisation at the health station	457	350	272	273
– Treatment with modern medicines combined with traditional ones	463	597	600	627
– Reduction and holding in place of fractures (1)	5,200	14.704	13.923	9,100
– Doses of traditional medicines distributed	4,000	3.810	28,260	23.761

1. Most of the cases came from other areas, attracted by the renown of the traditional-medicine practitioner of Phung Cong.

Mother-and-child care

This was the object of constant attention. The number of pre-natal examinations, deliveries, and gynaecological examinations followed by treatment with local medicinal plants increased. Family planning spread to all the hamlets.

In 1970 the village had 5 child-care groups, which were recognised as outstanding labour teams. The children were tended according to the rules of hygiene: eating, going to the toilet, and sleeping at fixed hours. This enabled the mothers to devote all their time to work.

These day-nurseries observed the following regulations:

— Only children aged 2 months to 3 years, and not affected by infectious diseases or other ailments, were admitted.

— Each family must contribute its child's ration of rice and other foodstuffs and put in one day of work once every six months for the creche.

— The families would meet once every month to examine the accounts and make proposals for improving management.

During the US air bombings of 1972, all the kindergartens built trenches and underground shelters and kept first-aid bags; and the children were taught how to run for cover whenever the alarm was sounded. Great attention was given to the training of young nurses (in 1970) by the health committee, the managing committee of the co-operative, and the village Women's Union, which took an active part in building kindergartens.

Vaccination and health care

In each production brigade and each hamlet, a vaccination record was kept over a five-year period. The committee for struggle against epidemics kept one such register for the whole village. Propaganda and education on the usefulness of vaccinations were carried out down to each labour team, each family and each inhabitant.

As from 1968 the vaccination rate rose among the villagers and sometimes exceeded 90% of the people to be vaccinated. From 1959 onward, no epidemic had broken out, and not a single case of poliomyelitis was recorded.

Great attention was paid to the control and eradication of social diseases such as trachoma, tuberculosis, leprosy and malaria.

Vaccinations in the years 1969—1972

Year	Number of people vaccinated with TAB	Percentage of persons vaccinated	Number of persons vaccinated against smallpox	Percentage of persons vaccinated	Number of persons vaccinated against poliomyelitis	Percentage of persons vaccinated
1969	2,363	—	1,016	—	765	—
1970	3,067	98 %	1,014	97.3%	732	98%
1971	3,113	96.3%	211	—	749	—
1972	3,212	97.4%	—	—	719	97%

Improvement and utilisation of the « Three Sanitary Facilities ».

During the war years the Phung Cong people overcame numerous difficulties arising from the shortage of building materials and strove to spread the "Three Sanitary Facilities" by various means. Following the re-establishment of peace, more financial means being available, they endeavoured to improve these facilities by building cesspool walls with bricks or cement, multiplying bathrooms, installing filtered-water tanks besides curbed wells, which were repaired or renovated. Sanitation teams intensified their activities and, in coordination with health cadres, guided the inhabitants in the proper utilisation of the "*Three Facilities*", particularly the double septic tanks.

Classification of cesspools

Year	Total number of cesspools	Kinds of cesspools			Quality of cesspools		
		Brick lids	Brick walls	Packed-earth walls	A	B	C
1969	630	218	257	155	—	—	—
1970	613	226	262	155	396	142	105
1971	613	226	262	155	440	162	41
1972	555	82	429	44	151	207	194
1973	491	102	323	66	109	273	119

Processing and utilisation of local medicina plants

Health cadres conducted research on the origins of medicinal plants in the village and on family recipes, encouraged people to grow and sell medicinal plants, and set up a model garden at the health station. They were able in this way to identify 130 kinds of medicinal plants in current use most of which had antithermic, anti-rheumatic and depurative effects, while some were used for treating a number of gynaecologic disorders. The yearly production of these plants was about 2,000 kilogrammes.

Twelve family recipes were selected, studied and codified; five other recipes for the treatment of facial paralysis, oedema, snake bite, choking, and dysentery, were later offered by the families who owned them.

Following research and selection, 90 species of medicinal plant proposed by the people were planted in the model garden, together with others brought in from other areas, adding up to 123 species in all, each of which had a tag fastened to it indicating its pharmacologic characters and its therapeutic effects.

Different species of medicinal plants in the model garden

1. Mỏ quạ : Cudriana obovota Trecul Moraceae
2. Lá dấu : Kalanchoe pinnata (Lanu) Pers.
3. Dỏn kim : Bidens pilosa Linn.
4. Cau : Areca catechu I. Palmae.
5. Ké hoa vàng : Sida Rhombifolia I. Malvaceae

6. Ké đầu ngựa : Xanchium Strumarium L Compositae
7. Bạch hoa xà : Plumbago zeylanica L Plumbaginaceae
8. Vòi voi : Heliotropium indicum L Boraginaceae
9. Xạ can : Balamcanda chinensis Lom Iridaceae
10. Bồ công anh : Lactuca indica L Compositae
11. Sài đất : Wedelie calendulacae Less Compositae
12. Bưởi bung : Acronyohis pedunculata Miq Rutaceae
13. Kim Ngân : Lonicera japonica Thunb Caprifoliaceae
14. Rau sam : Portulaca grandiflora Portu lacaceae
15. Mơ tam thể : Peodoria foetida L Rubiaceae
16. Cỏ sữa lớn lá : Euphoribis pilulifera L Euphorbiaceae
17. Thổ phục linh : Smilaso glabra Roxb Liliaceae
18. Thiên niên kiện : Homanolema aromatios Jungh Araceae
19. Cốt khí củ : Plygonum Cuspidatum Sieb Zucc Polygonaceae
20. Cốt khí muồng : Cassis occidentalia L Caesalpiniaceae
21. Lá lốt : Piper lotot D.C. Piperaceae
22. Lô hội : Aloe maculata Forak Liliaceae
23. Chút chít : Rumex Wallichii Meisen Polygonaceae
24. Hương phụ : Cyperus rotonelus Linn
25. Ích mẫu : Leonurus heterophyllus Sweet Labiatae

26. Đào : Prunus persica Stoken Rasaceae
27. Trúc Đào : Nerium oleander L Aposynaceae
28. Cỏ sước : Achyranthes aspera L Amarantaceae
29. Củ nghệ : Curcuma longa L Zingiberaceae
30. Tam lăng : Curculigo gracilis Vahl Amaryllicaceae
31. Tam thất : Panax pseudo ginseng Wall araliaceae
32. Hòe : Sophora japonica D.C. Papilionaceae
33. Trắc Bá : Thuya orientalis L. Cupressaceae
34. Huyết dụ : Cordyline terminalis Kunth. var. ferrea L Liliaceae.
35. Nhọ nồi : Eclipta alba hassk Compositae.
36. Chua me, lá me : Biophytum sensitivum D.C. Oxalidaceae
37. Chỉ thiên : Elephantopus Scaber Aubl. Compositae
38. Cây lá bỏng : Serissa foetida Comm Rubiaceae
39. Cây rau má : Centella asiatica Urban Umbelliferae
40. Cà độc dược : Datura metel L var. alba Nees solanaceae
41. Bồ cu vẽ : Breynia fructicosa hoo Euphorbiaceae
42. Cây cối xay : Abutilon indicum G. Don Malvaceae
43. Khổ sâm : Croton tonkinensis Gagnep Euphorbiaceae
44. Bạc hà : Mentha arvensis L Labiatae
45. Cây gai : Boehmeria nivea Gaud Urticaceae

46. Hoa cứt lợn : Ageratum Conyzoides L Compositae
47. Địa liền : Kaempferia galanga L Zingiberaceae
48. Gừng : Zingiber officinale Roscoe Zingiberaceae
49. Bạch chỉ nam : Millettia pulchra Kurz Papilionaceae
50. Cây vông nem : Erythrina indica Lamk papilionaceae
51. Ý dĩ : Coix lachyma jobi L Gramineae
52. Dinh lăng : Polyscias fruticosa Harms Araliaceae
53. Sâm đất : Boerhaavia repanda Willd nyctagenaceae
54. Hương bài : Vertivera zizanioides Stapf Gramineae
55. Mạch môn : Ophiopogon japonécus Wall Hemodoraceae
56. Thạch xương bồ : Acorus gramineus Soland Araceae
57. Biển đậu : Lablab vulgaris Savi
58. Hoắc hương : Podocarpus neriifolius Don Taxaceae
59. Cúc hoa (trắng) : Chrysanthemum sinense Sab Compositae
60. Bạch hoa xà : Plumbago Zeylanica L Plumbaginaceae
61. Húng chanh : Coleus aromaticus Benth Labiatae
62. Huyền sâm : Scrophularia buergeriana Miq-
63. Kinh giới : Eisholtzia cristala Willd Labiatae
64. Tía tô : Perilla ocymoides L Labiatae
65. Bán hạ nam : Typhonium divaricatum Decne

66. Ba chạc : Evodia triphylla D.C Rutaceae
67. Hạ khô thảo : Brunella vulgaris L Labiatae
68. Mần trầu : Eleusine indica gaerth
69. Gấc : Momordica cochinchinensis Spreng Cucurbitaceae
70. Tiểu hồi : Foeniculum vulgare Mill Umbelliferae
71. Tầm xuân : Rosa multiflora Thunb Rosaceae
72. Hương nhu (tía) : Ocinum samotum L Labiatae
73. Thầu dầu : Ricinus communis L Euphorbiaceae
74. Kiến cỏ : Rhinacentus nasuta Kurs.
75. Đại kế : Onious japonicus Maxim Compositae
76. Đau xương : Tinospora tomentosa olliera
77. Trần châu : Lysimachia decurrens Forst.
78. Rắp cá : Houttuynia cordata Thunb. Saururaceae
79. Thiên môn : Asparagus lucidus Lindl liliaceeae
80. Cây si : Ficus benjamina L Moraceae
81. Ngải cứu : Artemisia vulgaris L Compositae
82. Dành dành : Bardenia jasminbides Ellis Rubiaceae
83. Mã đề : Plantago major L Plantaginaceae
84. Xích đồng (nam) : Clerodentron infortunatum L Verbenaceae
85. Bạch đồng (nữ) : Clerodentron paniculatum L Verbenaceae
86. Cỏ tranh : Imparata cylindrica P Beauv Gramineae

87. Lá sả : Cymbopogou citratus staff. Gramineae
88. Đào nhân : Amende de Persica vulgaris Mill
89. Cát căn : Rhizome de Pueraria thomsom Gagnep
90. Đại bi : Blumea balsamifera D.C. Compositae
91. Bìm bìm : Impomoea pulchella Roth Convolunmaceae.

Protection of mothers and newborn infants

DANG PHUONG KIET
BUI DUC PHONG
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DO VAN NHIEM

Among the five accomplishments (1) of the public health service in Phung Cong over many years, care for mothers and infants may be considered of prime importance, particularly during the last decade. As elsewhere in the world, mothers and children constitute the part of the population that is the most threatened by disease and requires the most attention from the public health service. For their protection, one must associate activities in many domains (economic, cultural, social, public health...), while the results obtained will contribute to the improvement of the living standards of the population.

To a certain degree, Phung Cong's experience may be regarded as exemplary.

A vulnerable group

Mothers and children are to go through several critical periods: pregnancy, childbirth, and weaning.

1. The Vietnamese Ministry of Public Health has put forward the following five objectives:
a) To prevent and combat epidemic diseases; to build the Three Sanitary Facilities. b) To carry out family planning. c) To look after the health of the whole population by treating patients at their homes; to prevent and combat social diseases. d) To make use of traditional medicines. e) To build an omnipresent health care network.

Diseases and mortality can, in their case, be prevented to a large extent by practical measures.

From the biological viewpoint the health condition of the mother and that of the child are closely interdependent. The nutrients received by the embryo during the intra-uterine period depend on the mother's diet during her pregnancy. This regimen (mainly governed by economic and cultural conditions, as well as habits) is of great importance for the growth of the child. Therefore, the suckling's nutrition, growth, and even possibilities of life, depend on the mother's suckling potential. The mother's attentive care and love, as well as her suckling, are of great importance for the child's psycho-biological and subsequent moral development.

The mother's health depends, in several ways, on the cumulative effects of successive childbirths and periods of child care. Over-early marriage, an insufficient diet (usually aggravated by backward habits of dietary restrictions in childbed and hard and continuous manual labour), and childbirths at short intervals can drive the mother into a state of gradual denutrition and syndromes of maternal cachexia: osteomalacia due to deficiency in Vitamin D and calcium, ferriferous anemia, goitre due to deficiency in iodine, generalised denutrition (loss of weight due to disappearance of subcutaneous adipous tissue and destruction of muscles), premature aging and premature death.

All these affections, in their turn, influence the nutrition of the child, particularly of the intra-uterine foetus. Hazards such as metrorrhagia, uterine

rupture, post-partum septicemia, etc., are dangerous threats at the time of delivery, if the pregnancy has not been closely watched.

Asphyxia of the foetus with extremely grave consequences, tetanus of the newborn entailing high mortality, and three very frequent affections (diarrhoea, pneumonia and denutrition), are the main causes of mortality for sucklings, who are indeed the most vulnerable group of population and should therefore receive priority care.

Ecology and pathology. Results of sociological inquiries.

In 1977, a thorough inquiry was conducted in Phung Cong on the conditions of the social economy and on the state of infantile diseases.

This inquiry involved 539 households out of a total of 843 (66.3%), and was conducted through contac with each family, by means of direct interviews based on a questionnaire, associated with on-the-spot examination (living conditions: nutrition, housing furniture, hygiene). Clinical examination was made of 1,689 children below 15 years of age, that is, 79% of the total number of children in the village.

Classification of living standards. From the economic viewpoint, the households were classified into 3 categories: well-to-do (A) 140; average (B) 302; and poor (C) 108, and this on the basis of the following main factors:

	A	B	C
Brick houses	80 %	62.3 %	43.5 %
Rice: average per inhabitant per month (in kg)	15.6 kg ± 3.9kg	13.6 ± 2kg	10.7kg ± 4.2kg
Diet: rice and vegetables (%)	69.4	84.7	96.2
— : rice and occasional meat (%)	14.0	6	—
Living standards assed by the persons concerned themselves — Sufficient (%)	66.2	24.2	—
Living standards assed by the persons concerned themselves — Insufficient (%)	6.3	12.7	52.4

These differences have a statistical value ; P smaller than 0.01 — 0.001

Hygiene conditions and living standards :

Household	A	B	C
— with double-tank cesspool (%)	80.7	75.6	70.7
— no double-tank cesspool (%)	19.3	24.4	29.6
— with margined wells (%)	39.3	33.2	16.4
— flies observed inside the house (%)	35.2	55.0	62.0
— average quantity of soap used per inhabitant per month (gr)	155 ± 84	—	113 ± 60
— Children have their own towels (%)	48.0	45.4	32.4
— Children with clean fingernails (%)	40.0	37.0	17.5

These statistics show that a family's living standards have a direct bearing upon its living conditions (cesspool, margined well), state of hygiene (flies inside the houses, quantity of soap used), and sanitary habits (the children have towels of their own, and clean finger-nails).

Cultural level of mothers and living standards

	A	B	C
— 1st-level (primary) general education (%)	44.6	52.9	54.0
— 2nd-level (junior high) general education (%)	28.0	26.4	9.0
— 3rd-level (senior high) general education (%)	4.0	0.6	—
— Illiterate: many women relapsed into illiteracy after attending literacy courses (%)	22,4	20.0	37.0

The proportion of illiterate mothers and those having received only a 1st-level general education was greater in Category C (poor) than in Category A (well-to-do). Conversely, the proportion of mothers having a general education of the 2nd and 3rd levels was greater in Category A than in Category C.

Living standards and diseases among children

If diseases relating to the living standards and habits of life (cultural level) were taken into account, the rates of morbidity showed fairly clear differences.

Diseases	A	B	C
— Denutrition (%)	6.2	13.0	17.2
— Rickets (%)	—	12 5	26.4
— Diarrhoea (%)	0.4	2.5	4.1
— Trachoma (%)	7.4	12.2	21 4
— Scabies, impetigo (%)	1.5	4.6	4.4
— Measles (%)	1.7	7.7	9 2
— Whooping cough (%)	0.5	8.8	1.5

Following this survey, and on the people's proposals, the admintstrative committees of the village and the co-operative allotted building materials (cement, lime, bricks...) in priority to families with a poor living standard (C). Due to the population's efforts, after three years, living and hygiene conditions in the village as a whole, and in the families of group C in particular, improved noticeably.

A similar sociological survey conducted in October 1980 on 30 families with a poor living standard (C) picked out at random from among production brigades 2, 3, 4, 5, 8 and 9, gave the following results:

	1977	1980
— Total number of families surveyed	30	30
— Families having:		
+ a brick house	12 (40%)	18 (60%)
+ a double-tank cesspool	14 (46.6%)	22 (73.3%)
+ a margined well	8 (26.6%)	16 (53.3%)

For the whole village, sanitary conditions had improved after four years:

	1976	1979
Number of families having:		
+ a brick house	64.5 %	86.5 %
+ a cesspool	69.0 %	90.0 %
+ a cemented margined well	30.4 %	40.2 %

Thanks to improvement in the living and sanitary conditions, the rate of infectious diseases of the digestive system had clearly diminished:

Number of young children suffering from digestive diseases and treated at the health station.

Year	Acute diarrhoea	Dysenteric syndrome	Viral hepatitis	Total number
1970	56	30	—	86
1971	37	28	4	69
1972	70	20	8	98
1973	61	16	—	77
1974	42	11	3	56
1975	51	8	—	59
1976	32	9	—	41
1977	44	8	1	56
1978	29	12	—	41
1979	30	10	2	42
1980	18	7	—	25

The decrease in the number of children suffering from infectious diseases of the digestive tract went together with an increase in the number of families having a margined well (see figure I)

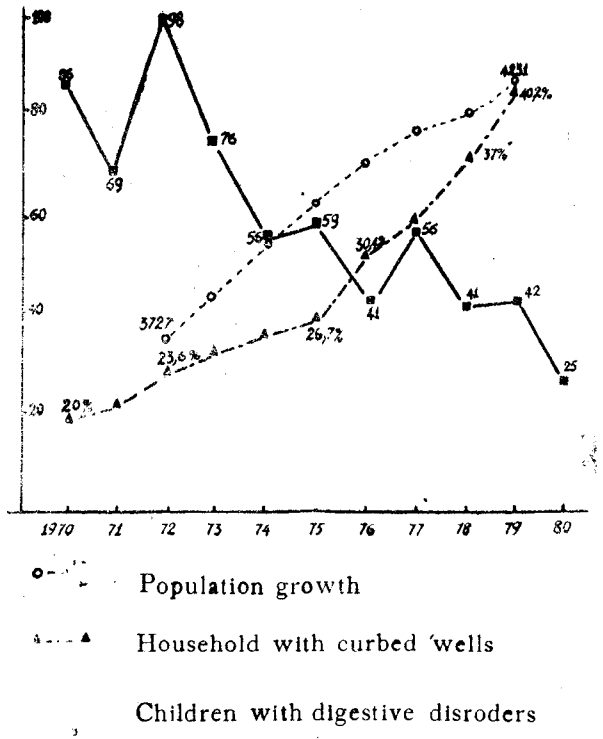

Fig. I. Rate of households having a margined well and that of children affected by diseases of the digestive system.

Building of the health network and health education

These were the prime conditions for attaining the objectives set for public health work, particularly in the care for mothers and infants.

The building of the health network was one of the five objectives of the public health service.

This work was stimulated by growing needs, particularly those stemming from the war of resistance to US aggression, and the rapid growth of education. The continuous development of the public health service in the whole country, particularly the progress in cadre training at provincial and district levels, created favourable conditions for the building and development of the health-care network down to the villages and hamlets.

At Phung Cong, the building and development of the health network also resulted from the gradual awakening of the population to the necessity of better health care. Thanks to the care dispensed to all villagers and the mass movement for the protection of public health, the people, first the leaders, gradually realised that health work could not be dissociated from production work, fighting, and everyday life, that not only was it an organic part of the economic, cultural and social life, but it also had a stimulating effect on all those activities.

Over the past few years in particular, with technical assistance from centrally-run institutes and hospitals aimed at realising a model for fighting diseases and protecting health in the countryside, the Phung Cong people had realised ever more clearly that health work is a sharp weapon that can help bring them well-being and improve their living standards. Consequently they had willingly contributed labour and money in order to create a material basis and a health network which had been expanded

and strengthened and had acquired new methods of work:

Year	Area of the health station (in sq. metres)	Members of the Red Cross	Sanitation workers	Nurses in production brigades of cooperatives	Nurses in treatment rooms	Auxiliary physicians	Traditional-medicine physicians
1970	145	42	12	14	5	3	2
1971	219	42	36	14	5	3	3
1972	235	73	36	14	5	3	3
1973	235	104	36	14	5	4	4
1974	403	104	36	14	5	4	4
1975	403	104	36	14	5	4	4
1976	403	104	36	14	5	4	4
1977	403	104	36	14	5	4	4
1978	403	256	36	13	5	4	4
1979	403	389	40	17	6	4	3
1980	403	389	40	17	6	4	3

The health network comprised a number of people who were given functions, but all were chosen from local production brigades or families. Whether they were professionals or non-professionals, whether they were paid or unpaid for their work, all were local people whose lives had long been linked to the village. They worked devotedly for they knew that they were looking after the health of their families, their co-villagers and themselves.

An auxiliary physician (assistant doctor) played the role of an animating spirit in the conduct of health-care activities. Having gone through the middle level of general education, he had received

systematic training at a provincial secondary medical school (three-year course). Then he had attended refresher courses at provincial hospitals or central institutes, where he had practised in a number of specialities (each time for three to six months or occasionally for a year).

Among the four auxiliary physicians working at the health station, one was chief of the station, in overall charge of health activities, especially those of a social character, such as family planning, building of sanitary facilities, growing of medicinal plants, and establishment of the health network. The second was charged with the treatment of patients at the health station, the third with mother-and-child care, and the fourth with external treatment (manipulation of fractures and luxations according to traditional-medicine methods).

These physicians were professionals working eight hours a day at the health station, taking turns ensuring permanent service, and receiving a monthly pay from the communal adminstration.

The *nurse* and the *midwife* had had primary or junior secondary general education. Trained systematically in their specialities, they worked directly under the physicians and were paid professional sanitation cadres.

The *nurses in the production brigades* took a direct part in agricultural production. Selected by each brigade, they received some medical training and became part-time health workers. They devoted some time each day (in the afternoon or the evening, sometimes the whole day) to health-care activities

such as : examining patients and giving them treatment at their homes, urging families (in the production brigade) to get vaccinated, helping to prevent epidemics, giving pre-natal examination and periodical health check-ups to children, supervising the building of cesspools, wells, etc. They received from the agricultural co-operative their pay in work-days (10 workpoints per day), according to their health-care activities. One may say that these agents were the essential links between the village health organisation (health committee and health station) and each member of the production brigade. They were *frontline sanitation workers* who played a very active role, giving care to each inhabitant, tracking diseases, warning of dangers of an epidemic outbreak. In other words, they were the front-line combatants in preventive medicine.

Health workers were persons who, provided with some medical training, voluntarily contributed to health-related social activities, helping the nurses in the production brigades in such activities as general hygiene (cleaning of the environment), vaccinations, and building of sanitary facilities.

Members of the Red Cross mostly consisted of high-school students, some teachers, and volunteers among the elderly people who would take part in mass health campaigns, give first aid to the wounded during enemy bombing raids, grow and collect local medicinal plants, etc.

Health workers and members of the Red Cross, though being unpaid workers, strictly observed the rules and constituted firm support for the mass health movements.

Traditional-medicine practitioners formerly solely used traditional methods of treatment such as reduction and holding in place of fractures, use of local traditional medicaments, etc. Many used to enjoy a privileged situation in remote rural areas where there was no medical doctor. These physicians practised traditional medicine based on the principles of ancient philosophy, used empirical medications with recipes handed down from father to son, treated common diseases by massage, manipulation, or acupuncture, mainly by a combination of traditional medicines essentially prepared from local medicinal plants.

The health committee of Phung Cong turned the most experienced traditional physicians into full-time health workers paid by the village administration, and specially charged with the treatment of certain conditions (contusions and bruises, luxations and sprains, minor simple fractures...) and with the preparation of medicaments based on local medicinal plants. This original method of treatment, solely by reduction and the use of splints, associated with medicaments prepared from local medicinal plants, attracted numerous patients from other parts of the country.

The results achieved at Phung Cong—and in other rural areas of Vietnam – were due to a general policy on public health of a popular character. It consisted in giving medical-care to each inhabitant in the most rapid and efficacious and least expensive way, utilising all local potentialities (money, labour, experience, technique, medicinal plants), very little financial investment, and few personnel. In short, a policy

suited to the economic conditions of a developing country.

Health education was considered as an indispensable method, constantly linked to health activities and aimed at making people receptive to new ideas and habits and self-reliant. It consisted in teaching people fundamental and practical health notions and help them cast off old habits and adopt new ones, in relation to the following problems:

– physiology of motherhood and methods of birth control;

– infectious diseases, cleaning of the environment and building of sanitary facilities;

– immunization and vaccination against epidemics;

– eugenics and related methods;

– rachitis and its prevention;

– intestinal parasites and preventive methods.

Training took diverse forms. Knowledge was first propagated among health workers (auxiliary physicians, nurses...) and members of the health network (sanitation workers, members of the Red Cross), then at meetings of Party organisations, administrative bodies, production brigades, and mass organisations (youth federation, women's union, elderly people's association, etc.) Health workers were the animating spirits: they gave instruction while taking care of patients or visiting families. High-school teachers were also active propagandists. Lastly the population received medical knowledge from the national radio and television, from the village public-address system, from books on medical vulgarisation, exhibitions, etc.

The survey of economic and social conditions and infant morbidity carried out in 1977 gave a boost to health education work : while it was conducted in each family on such questions as building cesspools, digging wells, keeping flies away, reserving for the children separate beds, towels, giving them boiled water to drink, making them wash their hands before meals, inspecting their fingernails, etc. and while clinical examinations were conducted to track diseases, the investigators had opportunities to look into the etiology of various diseases and give concrete advice to each family.

Thus, conducted in a meticulous and consistent way over many years, at different levels and in many forms, this health education work really contributed to renovating the cultural aspect of the village. It gradually drove back superstitious notions and backward habits, and helped establish new ones, healthy and scientific, which constituted the motive force for renewing the sanitary aspect of the village.

Watching pregnancy and child-birth

This activity consisted in :

– closely watching the stages of pregnancy of each woman member of each production brigade ;

– giving the pregnant women pre-natal guidance in their diet and work ;

– carrying out periodical pre-natal examinations and early tracking of anomalies in pregnancy and child delivery ;

– providing the pregnant woman with work suited to her condition ;

– anticipating the number of deliveries for each month and each week ;

– reducing obstetrical hazards to a minimum (hemorrhage, difficult delivery, uterine rupture, post-partum infections, asphyxia of the foetus, umbilical tetanus, etc.) in spite of the lack of technical means at the village level.

From the eugenic viewpoint, the following advice was given :

– pregnancy should not happen before the age of 18 and after the age of 40 ;

– stop using endocrinian medicines (contraceptive medicines, for instance) at least three weeks before conception ;

– in the first three months of pregnancy, avoid contact with persons suspected of having contracted flu or rubeola, and with chemical insecticides ; exercise caution in the use of chemical medicines and products ;

– beginning from the fifth month of pregnancy, follow an adequate diet as permitted by actual possibilities ; in case of anemia or an hemoglobin rate lower than 10gr, take iron tablets (provided by the health station) and increase protein intake (protein-rich foods provided in priority and according to possibilities by the agricultural co-operative) ; have urine examined for presence of albumin.

– beginning from the eighth month, measure the pregnant woman's blood pressure and, in case of positive proteinuria, recommend a saltless regimen and diuretic medicaments : in case of non-regression

after a week, take her to the district hospital for examination: the woman must be exempted from all hard manual work and guided in preparing all necessaries for her impending delivery (linen, clothes, milk bottle for the newborn, etc.), especially in the case of young primiparae.

– be prepared for the deliveries by getting all instruments ready and organizing tours of duty by the midwives;

– examine the newborn infant within the first 24 hours after its birth in the delivery room. If necessary, re-examine it before it leaves the health station. Take it immediately to a higher-echelon hospital (district, provincial) in case of vomiting, coughing, distension of the abdomen by gases, anal mperforate, acute respiratory insufficiency, attack of convulsions, etc.

– bring expectant mothers to the health station for delivery and watch them for symptoms of travail which may not appear before 3-5 days.

At each delivery, the midwife must register the name and age of the delivered mother, the name of her production brigade, the number of pregnancies and deliveries she had experienced, the number of pre-natal examinations she had received, her blood pressure, her albuminuria, her condition in travail and delivery, the condition and weight of the newborn, abnormal phenomena if any in the mother and child, the reasons if any for sending the mother to a health station of a higher echelon.

– *Results of a survey of pregnancies and deliveries*

Thus, in 10 years (1970–1980), the average numbrer

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	Total
– Number of pregnancies	115	125	99	105	115	106	77	75	82	83	982
– Number of pre-natal examinations	346	370	285	302	320	310	186	220	206	209	2,754
– Albuminuria (+)	31	20	18	19	21	17	15	15	18	20	194
– Deliveries at the health station	114	124	96	102	114	101	74	72	75	79	951
– Cases sent to the higher echelon	1	1	3	3	1	5	3	3	7	6	33
– Haemorrhage	1	5	2	—	2	—	—	—	—	—	10
– Uterine rupture	—	—	—	—	—	—	—	—	—	—	0
– Eclampsia	—	—	—	—	—	—	—	—	—	—	0
– Asphyxia of the newborn (5-10')	—	—	—	—	—	2	—	—	—	2	4
– Premature delivery (2,500gr)	4	2	—	1	—	—	1	—	—	—	8
– Still-born	1	—	—	—	—	2	1	—	—	2	6
– Umbilical tetanus	—	—	—	—	—	—	—	—	—	—	0

of pre-natal examinations was 2.8 (2754/982), the rate of albuminuria (+) 7% (194/2,754), the number of deliveries at the health station 96.6% (949/982), the average rate of women sent to a station of a higher echelon (district or provincial) for different reasons 3.3% (33/982), the rate of still-borns 0.63% (6/949), and the rate of premature deliveries 0.84% (8/949).

It is worth noticing that during those ten years' no case of eclampsia, uterine rupture or umbilical tetanus, which are hazards still occurring in other parts of Vietnam and frequently recorded in developing countries, was recorded at Phung Cong.

It is also to be noted that the rate of safely delivered newborns at the health station of Phung Cong (comprising 729 households with 4,697 members) was very high – 93.7% (943/949), in comparison with that (46.7%) in Grazyge village, 45 km from Beirut (Lebanon), for instance: a survey conducted in that locality in 1970 showed that 40% of the expecting mothers had not been watched during their pregnancy, 62% had been delivered at home, only 37% had been attended to by midwives, while 2.5% of the delivered mothers had been assisted by quacks who had received no professional training (1).

Decrease in infantile morbidity

The overall aims of preventive pediatrics (or *social pediatrics*) are:

– to follow and stimulate the physio-psychological development of children of different age groups (from the embryonic stage to young manhood);

1. Elias Srouji and Catherine Connolly in *Courier* (medico-social review of childhood) 1979, Vol. *XXIX* No. 4, p 333

– to ensure the specific prevention of foreseeable diseases (vaccination for basic immunity);

– to ensure early diagnosis (taking into account diseases not showing any clinical manifestations as yet) and adequate treatment in order to prevent sequels and reduce the mortality rate.

For Phung Cong whose economic, cultural and social conditions are those of a rural commune in a developing country, the basic aim was to reduce the incidence of *nutritional* and *infectious diseases* which are the most frequent among children *below 5 years* of age, and reduce by 80% the total morbidity of children.

The following methods were applied:

– strictly apply all regulations in pregnancies and deliveries to reduce the number of premature childbirths, difficult deliveries, malformations, obstetrical traumas and infections of the newborns;

– educate suckling mothers on lactation (diet, work and rest, restricted use of antibiotics, which may dry up milk secretion); on the use of locally available protein-rich foods; on how to prepare meals for children at each age, particularly to supplement maternal milk and during weaning (rice flour cooked with broth, egg yolk, rice gruel with meat or fish and vegetables, etc.)

– periodically weigh the child, particularly during the first 2 years; check it against the standard chart for Vietnamese children, and watch for signs of denutrition, especially among premature children, children fed insufficient diet, orphans, children suffering from congenital malformations (cardio-vascular,

digestive), children having suffered from dysentery, measles, etc. – all those cases being entitled to receive meat, eggs, fish and other nutritious foods in priority from the agricultural co-operative. Educate mothers on how to improve nutrition according to existing possibilities, and to watch for such conditions as serious denutrition (third degree according to *Gomez*), oedematous denutrition (*Kwashioskor*) or denutrition of the second degree accompanied by a pulmonary infection or disorders of the digestive system, calling for evacuation to a district of provincial hospital;

– administer Vitamin D: 300,000 units (mainly in injection) to all children aged 2 to 6 months;

– use locally-produced iron oxalate tablets for children above three years old with a rate of hemoglobinemia lower than 10 gr (ferriferous anemia), for a month;

– create basic immunity by vaccines (oral or injectable) produced and supplied by the State; vaccinate according to the technical rules set by the Ministry of Public Health: BCG, antipoliomyelitis, anti-measles, anti-small pox, anti-choleric, anti-typhoid vaccines;

– carry out a systematic purge every year; rid children aged 2 to 6 of intestinal parasites using santonin in reinforced doses;

– curettage of infected and hypertrophied adenoids for children below 4 years of age, after ear-nose-throat examination;

– quarantine, according to circumstances and with the consent of the families concerned, children affected by infectious diseases (measles, whooping

cough, dysentery, viral hepatitis..); treat with antibiotics (by injection or by the mouth) and intravenous perfusions of serums, at the health station, other acute affections (especially those of the digestive and respiratory systems).

Decrease in the rate of nutrition-related diseases

Watching for denutrition (among children below 3 years of age) through clinical signs and annual health check-ups (performed in April or May), and calculating the rate corresponding to each age bracket, we saw a decrease in the rate of denutrition-related affections over a period of four years:

Year	Age (years)	Total number	Decrease	
			Number of cases	Rate (%)
1977	3	128	7	5.4
(a)	2	131	18	13.8
(b)	1	101	14	13.7
(a)	3	131	3	2.3
1978 (b)	2	101	7	6.9
(c)	1	87	7	8.5
(b)	3	101	1	0.9
1979 (c)	2	87	8	9.2
(d)	1	100	6	6.0
(c)	3	87	2	2.3
1980 (d)	2	100	3	3.0
(e)	1	95	10	10.5

This table shows that:

– in group (a) with 131 2-year-old children, the rate of denutrition cases dropped from 13.8% (18/131) in 1977 to 2.3% (3/131) in 1968;

– in group (b) comprising one-year-old children, this rate dropped from 13.7% (14/101) in 1977 and 6.9% (7/101) in 1978 to 0.9% (1/101)in 1979;

– in group (d) comprising 100 one-year-old children, the rate of denutrition cases dropped from 6% (6/100) in 1979 to 3.0% in 1980.

Rickets incidence showed a similar trend:

– Out of 87 children of the one-year age group examined in 1978, 9 cases (0.9%) were found, solely on the basis of clinical signs. In 1979, there were only 4 cases (4.6%) left, and in 1980, one case (1.1%).

– among 100 children of the one-year age group, the incidence of rickets, 8.0% (8/100) in 1979, dropped to 2.0% (2/100) in 1980.

These results were certainly due to care given to high-risk children, and systematic prevention of rickets by Vitamin D.

Decrease of ear-nose-throat affections

Adenoids constitute a frequent affection in the under-5 age group. When hypertrophied and infected, they are the cause of numerous respiratory and digestive complications and also of retarded growth. The curettage of adenoids, when called for, effectively helps restrict these complications.

From the preventive viewpoint, curetting was effected on the spot by specialists, in these cases:

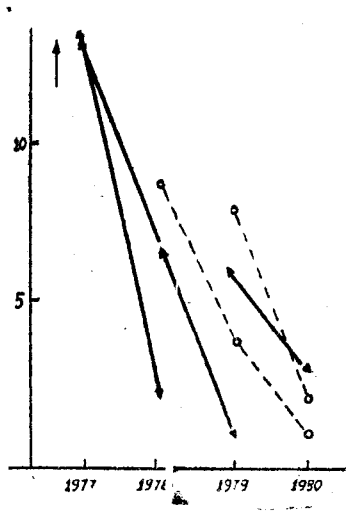

Fig. 2. Trend of decrease in diseases related to deficient nutrition and rickets.

hypertrophied and infected adenoids provoking breathing through the mouth, accompanied by repeated attacks of middle otitis or lingering rhinitis and pharyngitis... especially for the age group of 4 years and less. After two years of observation, the rate of ear-nose-throat affections had changed:

Generally speaking, for all age groups, following curetting the rate of adenoids dropped from 32.7% to 17.9%, of midde otitis from 9.6% to 8.3%. This table also shows that the rate of adenoids and otitis was the highest in the 2-year age group, respectively 41.5% (42/101) and 19.8% (20/101), and that the effect of curettage was also the clearest: it reduced the rate of otitis by half (from 19.8% to 10.9%).

Age (years)	Number of children	1978						1980					
		Adeno ds		Middle Otitis		Curetting of adenoids		Adenoids		Middle Otitis			
		Number of children	Rate (%)	Number of children	Rate (%)	Number of children	Rate (%)	Number of children	Rate (%)	Number of children	Rate (%)		
4	128	44	31.3	5	3.9	26	20.3	26	20 3	7	5.4		
3	131	32	21.4	10	7.6	5	3.3	21	16 0	12	9.1		
2	101	42	41.5	20	19.8	15	14.8	18	17.8	11	10.9		
Total	360	118	32.7	35	9.6	46	12.7	65	17.9	30	8.3		

— Decrease in the rate of ascaridian affections

Examining the feces of 421 children of the 1-7-year age group, we found ascarid eggs in 377 cases (75.2%). Ascaridian infections constitute one of the major problems among chidren in rural areas. Ascaridian parasitosis, or more accurately, relapses of it, may lead to complications. Not only does it aggravate denutrition but it may also provoke intestinal occlusions and perforations, angiocholitis, hepatic abscess, etc. The prevention of ascaridian affections among children depends on many measures such as solution of the waste-disposal problem, supply of clean drinking water, elimination of anti-hygienic habits, etc. It requires socio-economic reforms and takes time. However, one can limit complications due to ascarids by systematic periodical purges, using cheap, efficacious, harmless, and easily available medicaments on a large scale. The following method was adopted: after a light evening meal the child was given a single dose of santonin of 0.015 g. per kilogramme of weight: no fast and no purgatives the next day.

The analysis of 300 health examinations of the 2-4-year age group on the basis of clinical symptoms which had obliged these children to receive treatment at the health station (abdominal pains accompanied by vomiting, presence of ascarids in the feces, syndromes due to the penetration of ascarids into the bile ducts, occlusions or semi-occlusions) showed that all these manifestations visibly decreased following systematic purges:

Age	Number of children	Before purge (1978)		After purge (1979)	
		Manifestations of ascaridian infections		Manifestations of ascaridian infections	
		Number of children	Rate (%)	Number of children	Rate (%)
4	128	41	32	12	9.3
3	131	29	22.1	12	9.2
2	101	12	11.8	6	5.9
Total	360	82	22.7	30	8.3

Provocation of basic immunity and epidemiology

To create basic immunity by different kinds of vaccines is a capital measure to prevent infectious diseases frequent among children and likely to cause a high rate of infantile mortality. Phung Cong, like almost all the other rural areas of Vietnam, has given great attention to vaccination, a cheap, simple, efficacious method applicable to the whole population and suited to the conditions of developing countries. This measure should be applied to small children before they may be affected by these diseases, in the period when passive immunity due to maternal transmission has disappeared and when the children's organisms are already capable of producing active antibodies.

In practice certain obstacles have to be overcome:

— the reticence of the population at the beginning, due to past customs and habits;

— climatic conditions and transport difficulties, vaccines being fragile biological preparations;

— the working conditions of the local population.

However, thanks to the establishment of a wide health network deeply rooted in each production brigade, the persevering work of explanation and persuation, the good results of daily hygiene, and the experience acquired in associating vaccination with different activities, vaccinations at Phung Cong brought the following results over a period of 10 years. (see table on following page).

All the vaccines were supplied by the Central Institute of Hygiene and Epidemiology, through its provincial and district stations charged with instruction and inspection of vaccination techniques in the various localities.

Those vaccinations, aimed at creating basic immunity for the whole population, made it possible to ward off, during all these years, many infectious diseases: cholera, typhoid fever, poliomyelitis... However, other diseases (measles, chicken-pox, mumps, whooping cough and occasional cases of encephalitis and tuberculosis) still required adequate preventive measures, although there were few deaths.

Use of local medicinal plants

The use of traditional medicaments (medicinal plants) in therapy is a long-standing practice of the Vietnamese rural population. Six centuries ago, a renowned physician named Tue Tinh, in his

The different vaccines used and the number of times immunity was created

Year	BCG		Poliomyelitis		TAB		Small pox		Measles		Diphtheria	
	a	b	a	b	a	b	a	b	a	b	a	b
1970	115	100	602	98	3,034	87	3,406	92	—	—	—	—
1971	125	100	749	91	3,434	78	—	—	—	—	—	—
1972	126	100	609	94	3,075	90	—	—	—	—	—	—
1973	105	99	673	95	3,145	88	—	—	—	—	—	—
1974	1,082	99	641	98	3,583	95	119	92	—	—	—	—
1975	581	90	737	96	3,566	96	2,456	97	648	95	—	—
1976	311	99	660	95	4,144	96	185	95	—	—	603	94
1977	207	97	682	90	3,876	94	67	81	59	95	—	—
1978	275	97	614	87	3,877	92	—	—	676	92	—	—
1979	283	98	528	93	3,587	94	—	—	—	—	—	—

(a) Number of times creating immunity (by the mouth or by injection).
(b) Rate (%) obtained in comparison with targets.

Infantile infectious diseases

Year	Measles	Chicken-pox	Whooping cough	Mumps	Encephalitis	Tuberculosis	Diphtheria	Poliomyelitis	Cholera	Typhus
1970	125	13	16	4	2	—	—	—	—	—
1971	94	37	26	2	1	—	—	—	—	—
1972	—	18	5	127	2	—	—	—	—	—
1973	18	8	13	5	—	—	—	—	—	—
1974	4	16	10	10	—	—	—	—	—	—
1975	7	21	15	3	—	—	—	—	—	—
1976	13	11	11	4	1	—	—	—	—	—
1977	3	12	8	8	—	11	—	—	—	—
1978	166	36	12	1	1	6	—	—	—	—
1979	6	45	60	5	—	—	—	—	—	—
1980	1	3	—	2	—	—	—	—	—	—

book *Nam duoc than hieu* (Marvellous Remedies of the South), recorded as many as 630 effective local medicinal plants. Four centuries later, his no less renowned colleague, Hai Thuong Lan Ong, also studied the best popular medical recipes in his book *Y tong tam linh* (Principles of Medicine).

The use and development of local medicinal plants in disease treatment and prevention have long been a prime rule of conduct for the health committee of Phung Cong, with full support from the administration and population. To this end, the village administrative committee has reserved land for the cultivation of these plants while the village health committee has employed a number of experienced traditional physicians, granting them a monthly salary. The latter, besides practising their specialities, provide guidance in the preparation and use of traditional medicaments. The health station has also reserved part of its premises and equipment for producing pharmaceutical preparations for sick people in the village.

Several pharmaceutical preparations from traditional formulas are used against periodontitis, gengivitis, pharyngitis, boils, syndromes of diarrhoea and dysentery, etc.

Phung Cong: a place for scientific research and cadre training

The continuous progress of health-care activities in Phung Cong began with a change in the concepts and habits which had persisted for a very long time among the villagers. By following the general line of the revolution, acting under the leadership of the

Year	Area under medicinal plants (in *sao* 360 sq.m)	Yield of dried products per year (in kg)	Preparations							Value in *dong*		Number of cases treated
			Powder (kg)	Tablets (kg)	Liquids (litres)	Syrup (litres)	Tea (kg)	Powder for massage (kg)	Total	Average per inhabitant		
1970	3	142	11	87	94	42	50	46	—	—		40
1971	3	273	9.8	29	34	50	42	73	—	—		40
1972	3	178	16	93	62	49	40	50	—	—		40
1973	3	150	12	114	442	60	37	56	1,863	0.5		62
1974	10	502	13	125	573	15	42	60	1,926	0.5		70
1975	10	642	6.7	120	55	15	10	40	2,362	0.6		70
1976	6	320	8.8	5	25	7	—	38	3,192	0.8		74
1977	12	510	9	5.5	9.3	30	5	92	1,910	0.47		70
1978	12	857	7	4.2	11	25	5	44	2,838	0.7		70
1979	12	1034	6	4.8	100	30	—	32	4,000	1.0		70

village administration, and applying a creative method, enthusiastic and dynamic cadres have played a crucial role. Other no less important factors are the warm support given by the mass organisations and the people, their efficacious collaboration, and the technical assistance of many specialized departments of centrally-run institutes and hospitals – pediatrics, internal medicine, obstetrics and gynaecology, ear-nose-throat, odonto-stomatology, tuberculosis, microbiology, biochemistry, nuclear medicine (radio-isotopes) – which have since 1977 come for surveys and experimentations. Their reports, some of which are published in this booklet, have a medical and social character and a pluri-disciplinary character. Not only do they provide concrete data on the health condition of the population (especially children and mothers) of a village, but they also record the first experiences in the search for a suitable model of study of rural medicine in a developing country (1).

Phung Cong is a favourable place not only for conducting studies of rural medicine, but also for the training of cadres. Hundreds of sixth-year students of the Hanoi Medical College have come there for at least one month for practice in social pediatrics. Before completing their studies, they will have had concrete contact with social pediatrics, and done practical work on the content, methods, organisation and survey of health care for children – a must in the training of pediatricians in developing countries.

1. A number of foreign authors have conducted similar surveys .

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– Elias Strouji, in Ghazyge village, 45 km from Beirut, Lebanon (*Courier–a Medico–Social Review of Childhood*, 1979. Vol. XXIX, No. 4).

– Kido Sujita, in Godli Gaya village, 400 km from Calcutta, India (*Asian Medical Journal* November 1979, Vol.22, No. II).

It apprears, however, that these authors have confined themselves to conducting basic surveys of a mono-disciplinary character. They have not analysed the economic, cultural and social aspects and their relations with health and diseases, nor have they carried out any experimentation in preventive medicine.

A serological study of grippy and adeno-viral infections among children

VU VAN NGU

Under a plan for co-operation between the Medical Microbiology Department of Bach Mai Hospital and the Re-animation Department of the Pediatrics Institute, Hanoi, a serological study was made among children from two months to seven years old in Phung Cong commune, Hai Hung province, with the aim of tracking down the antibodies of infections of the respiratory tract: grippe, adeno-virus, ornithosis-psittacosis and rickettsia.

In this study, only results concerning grippe and infections by adeno-virus are given.

Material and Method

Material

Blood extraction by venous punction was made among three groups of children. The serum was extracted after coagulation. The age brackets of these three groups are as follows: (see table)

Method

Two techniques were used : inhibition of hemagglutination according to the *Casala* method (1958) and fixation of the complement.

– Inhibition of hemagglutination

This reaction only applies to viruses.

Group	Age bracket	Number of serums		
		Reaction of inhibition of hemagglutination of grippe	Reaction of fixation of complement of grippe	Reaction of fixation of complement of adeno-virus
I	7 to 12 years	26	14	32
II	3 to 6 —	39	20	60
III	3 — and younger	21	10	23

Some viruses have the property of selectively agglutinating red blood cells of certain animals, for example the grippe virus and the virus of encephalitis could agglutinate the red blood cells of a cock or a goose :

– Virus + red blood cells ⟶ agglutination (visible to the naked eye).

– Virus + serum (containing anti-viral antibodies) + red blood cells ⟶ no agglutination.

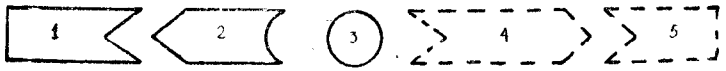
– Fixation of the complement

This reaction applies to viruses and bacteria.

When the antigen and specific corresponding antibody were present, the complement fixed itself on the antigen + antibody complex. If the antigen was viral or bacterial, this fixation was not visible to the naked eye. Therefore we had to resort to a different complex of antigen (red blood cell of a sheep) and antibody (serum of rabbit and red blood cell of sheep) to visualise the fixation, for if

the complement fixed itself on the latter antigen-antibody complex, the red blood cells of sheep would be hemolysed.

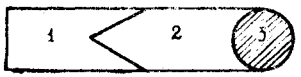
The first antigen-antibody complex was first put in the presence of the complement. If this complex was specific, the complement would fix itself onto it. The addition of the second complex did not change the situation. The complement which was already fixed on the first complex did not react on the second and no hemolysis took place. If the first complex was not specific (the serum did not contain specific corresponding antibodies to the antigen), then the complement would fix itself on the added second complex and there would be hemolysis (visible to the naked eye).



Complex I *Complement* *Complex II*

Comprising the standard antigen and the serum of the patient to be tested

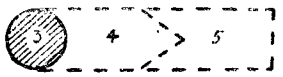
Comprising the red blood cells of sheep and the anti-sheep rabbit serum 56°/30'



Complex. I
specific

No hemolysis
(positive reaction)

Complex I
non-specific



Hemolysis
(negative reaction)

Results

Grippy infection

— Reaction of inhibition of hemagglutination. Global results

Table 1

Results	Group I			Group II			Group III		
	A2HK	A ch	BHK	A2HK	APch	BHK	A2HK	APch	BHA
(–)	7	1	20	25	1	38	8	16	21
1/16	1	—	6	2	2	1	2	3	—
1/32	—	1	—	3	2	—	1	1	—
1/64	2	1	—	6	5		—	—	—
1/128	10	—	—	3	9	—	3	1	—
1/256	3	8	—	—	8	—	1	—	—
1/512	1	9	—	—	6	—	2	—	—
1/1024	—	5	—	—	2	—	—	—	—
1/2018	—	1	—	—	3	—	—	—	—
1/1096	—	—	—	—	1	—	—	—	—
1/8192	2	—	—	—	—	—	—	—	—
Total	26	26	26	39	39	39	21	21	21

This table shows that there is little to say concerning BHK. In these three groups, almost all the cases were negative. In group 1, 6 out of 26 cases were positive with a very low titre (1/16), not very significant from the clinical point of view.

Positive results were obtained especially with the grippe virus of group A.

The analysis of the distribution of the group A grippe virus, according to different titres in the three groups of children, gave the following results:

A2HK *Table 2*

Results	Group I	Group II	GroupIII	Total
(—)	7 26.9%	25 64.1%	8 38%	10 46.5%
1/16 — 1/64	3 11.5%	11 28.2%	7 33.3%	21 24.5%
1/128 — 1/256	13 50%	3 7.7%	4 19%	20 23.2%
1/512 — 1/2.018	1 3.8%	0 —	2 9.5%	3 3.5%
1/4.096 — 1/8,192	2 7.6%	0 —	0 —	2 2.3%
Total	26	39	21	86

$x^2 = 25.589$
$P < 0.001$

APch *Table 3*

Results	Group I	Group II	GroupIII	Total
(—)	1 3.8%	1 2.6%	16 76.2%	18 20.7%
1/16 — 1/64	2 7.7%	9 23.1%	4 19%	15 17.7%
1/128 — 1/256	8 30.8%	17 43.5%	1 4.8%	26 30.2%
1/512 — 1/2,048	15 57.7%	11 28.2%	0 —	26 30.2%
1/4,096 — 1/8,192	0	1 2.6%	0 —	1 1.2%
Total	26	39	21	86

$X^2 = 63.485$
$P < 0.001$

The statistical study of tables 2 and 3 shows that the titre $\geqslant$ 1/512 may be considered as a basis for affirming the positiveness ($P = 0.001$) for the two types A2HK and APch.

Reaction of fixation of the complement
Global results

Table 4 shows that most of the children of the three groups had a negative reaction to the grippe viruses A, B and Sendai. From the titre 1/40, the number of positive cases dropped visibly.

The following tables (5, 6 and 7) give the results of analysis and comparison of the different titres concerning viruses A, B and Sendai:

Table 4

Results	Group I			Group II			Group III		
	A	B	Sendai	A	B	Sendai	A	B	Sendai
(-)	5	8	10	11	11	9	5	8	5
1/10	1	2	1	2	5	3	3	2	3
1/20	6	0	2	4	3	3	1	0	1
1/10	1	3	1	2	0	3	0	0	1
1/80	1	0	0	1	1	2	1	0	0
1/160	0	1	0	0	0	0	0	0	0
Total	14	14	14	20	20	20	10	10	10

Virus A *Table 5*

Results	Group I	Group II	Group III	Total
(-)	5 35.0%	11 55%	5 5%	21 47.7%
1/10 — 1/20	7 50%	6 30%	4 40%	17 38.6%
1/40 - 1/160	2 15%	3 15%	1 10%	6 13.7%
Total	14	20	10	44

$X^2 = 1.646$
$P > 0.05$

Virus B *Table 6*

Results	Group I	Group II	Group III	Total
(-)	8 57.4%	11 55%	8 80%	27 61.3%
1/10—1/20	2 14%	8 40%	2 20%	12 27.3%
1/40—1/160	4 28.6%	1 5%	0 —	5 11.4%
Total	14	20	10	44

$X^2 = 8.407$
$P > 0.05$

Virus Sendai *Table 7*

Results	Group I	Group II	Group III	Total
(-)	10 71.4%	9 45%	5 50%	24 54.5%
1/10 - 1/20	3 21.4%	6 30%	4 40%	13 29.5%
1/40—1/80	1 7.2%	5 25%	1 10%	7 15.9%
Total	14	20	10	44

$X^2 = 5.17$
$P > 0.05$

A statistical analysis of the results of tables 5,6 and 7 shows that there is no significant difference between the positive titres (X^2 observed $< X^2$ theoretical, that is, $P > 5\%$.) It is difficult to determine a titre serving as a basis for affirming the positiveness.

Proceeding from practical experiments and from figures given by other authors, we may take the titre $\geqslant$ 1/40.

Infection by adeno-virus

The reaction of fixation of the complement gave us the following global results:

Table 8

Results	Group I	Group II	Group III
(−)	16	26	19
1/10	11	18	3
1/20	3	11	0
1/40	0	3	1
1/60	2	2	0
Total	32	60	23

The negative results showed a high percentage especially in group III. Positive results, with a not very high titre, were also common (1/10–1/20). The titres 1/40–1/80 were rare. The analysis of the repartition of the different titres of positiveness is summed up in Table 9.

Table 9

Results	Group I	Group II	Group III	Total
(−)	16 50%	26 43.3%	19 82.6%	61 53%
1/10 − 1/20	14 43.7%	29 48.3%	3 13%	46 40%
1/40 − 1/80	2 6.3%	5 8.3%	1 4.4%	8 6.9%
Total	32	60	23	115

$X^2 = 15.39$
$P \geqslant 0.001$

The positive titres in Table 9 have a significant peculiarity, and one may take the titre $\geqslant$ 1/80 to affirm the positiveness.

COMMENT

On the reaction of inhibition of hemagglutination in the diagnosis of grippe

It is a widely utilised and very efficacious reaction. It enabled us to discover not only group antibodies but also type and sub-type ones. The *specific inhibition antibodies* often appeared alongside the neutralising antibodies, but they could precede or follow the appearance of antibodies that are fixers of the complement. The inhibiting antibodies could persist a long time while the antibodies fixing the complement sometimes dropped to levels impossible

to detect The specific inhibiting antibodies persisted in the serum of patients affected by grippe. They could be detected even at high titres when the agent of the new infection had antigenic ties with the grippe virus.

We should admit that the reaction of inhibition of hemagglutination could be negative even in a patient affected by grippe because of the difference of antigenerity of the pathogenic agent. That is why at the outbreak of an epidemic whose not yet isolated agent belonged to a "sub-group" or showed an antigenic mutation, one could not use this reaction for the diagnosis if the antigen used belonged to another source. Hence the necessity to use the two serums (1st and 2nd serums) to affirm the significant dynamism of the antibodies.

For the moment, the authors cannot express any opinion if the reaction happens with only one serum. Our personal experiments over the past years and the serological study effected at Phung Cong allow us to consider the titre $\geqslant$ 1/512 as significant for the diagnosis.

On the reaction of fixation of the complement

Grippe: this reaction enabled us not to differentiate "sub-groups" like A1, A2, etc., but to make an etiological diagnosis.

According to Deguet (1960), in the Asian grippe, the titre 1/320 set in for a few days then disappeared for about six weeks.

During the epidemic period, the limit titre of positiveness was 1/20.

According to *R. Sohier* (1964), it was rare to have a titre $>$ 1/8 90 days after the disease began. For most cases of infection, within a period of three months the titre varied from 1/16 to 1/32. The antibodies appeared on the fifth day, reaching the maximum (from 1/64 to 1/1.024) on the 7th and 15th days. Among the children, in particular, the titre did not exceed 1/16.

With serums taken tardily, on the 10th—25th days, the titre $\geqslant$ 1/64 indicated a recent case of grippe.

In the case of a tardy serum with a titre of 1/16—1/32, one may think of a week-old infection.

Adeno-virus. So far group specificity has been affirmed for antigens prepared from *Hela* cells while type specificity is still being open to discussion.

According to *Lepine* (1964), antibodies could be discovered on the sixth day of the disease reaching the titre of 1/160 for 15 days; the titre afterwards dropped to 1/10—1/20 and remained unchanged for years.

According to *R. Sohier* and his collaborators (1964), the average titre after the infection was 1[64-128 and remained at the level of 1/16 after the end of the third month. But it may happen that the titre remained at 1/256 in the fourth month, at 1/64 in the sixth month and at 1/32 after 11 months. In view of the complexity of the antigens (there are about 30 different antigens), we must take into account the cross immunity due to the presence of a common antigen. This is perhaps the reason why some authors have found that the titre of the antibodies remained at 1/64 after 41 months and even after seven years.

Basing ourselves on the results obtained by the above-mentioned authors and on the results of our own researches on the reaction of fixation of the complement, we believe that the titre $\geqslant$ 1/40 (for the grippe virus) and the titre 1/80 (for the adeno-virus) can serve as a basis for affirming positiveness.

Conclusion

The serological study of the three groups of children in Phung Cong commune led us to the following conclusions :

– The presence of antibodies against grippe virus and adeno-virus is logical (the lower the age, the rarer the grippe and adeno-viral infections).

– For the grippe virus, one can affirm that the titre $\geqslant$ 1/512 in the reaction of inhibition of hemagglutination and the titre $\geqslant$ 1/40 (in the reaction of fixation of the complement) are significant for diagnosis.

– With the adeno-virus, one can consider the titre $\geqslant$ 1/80 (reaction of fixation of the complement) as positive.

It remains for us to make an anamnestic study of the viral infections of the respiratory tract among children of the three groups, in order to compare the results with those of the serological study.

Healthy carriers of staphylococcus aureus (coagulase+) among children

VU VAN NGU

We have tried to determine the state of healthy carriers of staphylococcus aureus. This bacterium, whose reservoir is man, constitutes the pathogenic agent of widespread diseases with severe evolution.

Material and method

Our study involved 130 children of the following age groups :

– from 2 months to 3 years : 27
– from 3 years to 6 years : 69
– 7 years : 34

We swabbed the posterior nasal fossae and the throat. Culture was made in *Chapmann* milieu and blood jelly. The pathogenic staphylococcus was identified according to the following criteria :

– morphology, pigment ;
– presence of hemolysin in blood milieu ;
– fermentation of mannite ;
– coagulation of rabbit's plasma.

Results

– from 2 months to 3 years : 27
  Nose : pathogenic staphylococcus : 0
  Throat : pathogenic staphylococcus : 4
– from 3 years to 6 years : 69
  – Nose : pathogenic staphylococcus : 1
  – Throat : pathogenic staphylococcus : 4
– 7 years : 34

– Nose : pathogenic staphylococcus : 0

– Throat : pathogenic staphylococcus : 0

Among the 130 children there was only one case of pathogenic staphylococcus in the nasal fossae. The percentage was thus only 0.7%

If one takes into account the presence of pathogenic staphylococcus in the throat, then there were altogether 9 cases of healthy carriers, that is, 6.9%.

Comment

According to Fleurette (1), pathogenic staphylococcus can be found especially in the nasal fossae and the ratio of healthy carriers of staphylococcus varies from 30 to 50%. Other researchers (2) believe that in some tropical regions this percentage is a little lower (15 to 25%). In our study, it was very low, barely reaching 1%.

The percentage of carriers of staphylococcus in the throat is significant and varies from 4% to 60%, but researches on this question are still few and do not permit us to come to valid conclusions (3).

Some researchers find staphylococcus in the nasal fossae more often than in the throat, others only find them in the throat. There are ample grounds for thinking that among sucklings (4) the state of

1. J. Fleurette – "Infections by Staphylococcus" E.M.C. *Infectious Diseases* – Vol. 8007 A10 – November 1977–Paris
2. W.H.O. *Streptococcic and Staphylococcic Infections*–Report by a team of W.H.O. experts. – Geneva 1968.
3. Dang Phuong Kiet and collaborators – *Annals of Scientific Researches* (1970–1974) of the Pediatrics Institute–Medical Pub. House, Hanoi, 1978.
4. Ng. Cuoc and collaborators – "Treatment of Hookworms by Vermox" (*Practical Medicine*) Nos 3, 5, 6, 1978)

being healthy carriers of staphylococcus in the throat is more durable than in the nasal fossae. Among 27 children aged 2 months to 3 years, we only found four cases in the throat and none in the nasal fossae. Among 34 children of seven, we did not find any case either in the throat or in the nasal fossae. According to Fleurette, the state of being healthy carriers of staphylococcus in the throat and the nasal fossae is noticeable among children. It diminishes at puberty and adolescence.

Conclusion

The ratio of healthy carriers of staphylococcus in the throat or the nasal fossae among children of Phung Cong commune was very low compared with classical figures. This problem deserves to be studied on a large scale in order to get valid conclusions.

We should also compare it with pathological manifestations due to staphylococcus among the population of Phung Cong, especially among children, for, as said earlier, the source of staphylococcus is man.

Infestation with intestinal parasites among children

VU VAN NGU

To have an idea of infestation with intestinal parasites among children, we have examined the stool of 421 children aged 1 to 7.

Examination technique

A sample of morning stool was put in a sterile phial. Direct examination was made after enriching the sample according to the WILLIS method (using oversaturated salt water).

Results

Infestation with roundworms	:	327 children	(75.2%)
— — hairworms	:	124 —	(29.4%)
— — pinworms	:	7 —	(1.6%)
— — hookworms	:	1 —	(0.2%)
Infestation with 2 parasites	:		
Roundworms + hairworms	:	99 children	(23.5%)
Roundworms + pinworms	:	2 —	(0.4%)
Hairworms + pinworms	:	1 —	(0.2%)
Hairworms + hookworms	:	1 —	(0.2%)
Infestation with 3 parasites	:		
Roundworms + Hairworms + pinworms	:	3 children	(0.7%)
Not infested		75 —	(17.8%)

Comment

The above figures show that infestation with intestinal parasites was high (82.2%) among children aged 1 to 7.

The percentage of infestation by roundworms, — 75.2%, surpassed that recorded by other authors who conducted researches in other regions (1). Dang Phuong Kiet (1972) found infestation among 23.2% of 2,409 children in Ha Tay; H.T.K Chi (1969) among 74.8% of 943 children in Ha Tinh, C.Q. Viet (1969) among 52.1% of 1,116 children in Haiphong.

The high percentage of infestation recorded by us is accounted for by the geographical conditions, way of life, food hygiene and behaviour of children. It can also be explained by the fact that in their studies the above-mentioned authors only based themselves on clinical signs (without examining the stool) and that their investigations were conducted among children aged to 15.

On the other hand, our research only concerned children aged 1 to 7, and infestation with hookworms was very rare: 1 child out of 421.

According to a study by Ng. Cuoc (2), the ratio of infestation with hookworms in 290 children aged 1 to 15 in Thuy Phu commune (Binh Tri Thien province) was high (71.37%). This percentage of infestation increased with age (45.2% in children aged 1 to 3, 86.81% in children aged 7 to 11).

1. Dang Phuong Kiet and collaborators — *Annals of Scientific Researches* (1970—1974) of the Pediatrics Institute— Medical Pub. House, Hanoi, 1978.
2. Ng. Cuoc and collaborators — "Treatment of Hookworms by Vermox" (*Practical Medicine*, nos. 3,5,6, 1978).
3. J. Fleurette — "Infections by Staphylococus" E.M.C— *Inflectious Diseases* — Vol. 8007 A10 — November 1977 — Paris.
4. W.H.O. *Streptscoccic and Staphylococcic Infections*— Report by a team of W.H.O. experts. — Geneva 1968.

This fact can easily be explained: Thuy Phu commune was located in a newly-liberated area and had only two recently built double-septic tanks (compost toilet) which met sanitary standards. Most of its inhabitants walked bare-footed and children relieved themselves in the fields.

Infestation by hairworms after infestation by ascarids was also high (29.4%). These were probably the two most common parasites. Their association was frequent: 99 children infested (23.5%).

Conclusion

Infestation with intestinal parasites, especially by roundworms and hairworms was frequent. The deparasiting of children poses an urgent problem, in view of the nefarious consequences of intestinal parasites. Adequate preventive measures are necessary.

Anti-ascarid effect of santonin (new posology) among children

DANG PHUONG KIET
NGUYEN NGOC DOAN
NGUYEN THI HIEN
DO VAN NHIEM

Necessity of anti-parasitic medication among children

Infestation with ascarids among children of Phung Cong commune (1) as in other rural areas is an outstanding problem. The presence of ascarids in the digestive tract has bad consequences. This parasite robs the host of an important part of nutritive substances. Accidents due to its presence, especially among reinfested children of the 2-7 age group (occlusion and perforation of the intestines, obstruction of the bile ducts, abscess of the liver, perforated pleurae, and so on..) are serious, require expensive treatment, and cause a high mortality rate.

The deparasiting and prevention of infestation for the entire population are complex, costly and long-term problems and must be carried out on a large scale. However, in the short run and in order to limit infestation and prevent accidents, one can, alongside the protection of the environment (solution to the fecal problem) and food hygiene, deparasite children, en masse and at fixed periods.

1. See Vu Van Ngu — *Infestation with Intestinal Parasite among Children* in this issue.

The massive deparasiting of children must meet the following requirements:

– The medicine used must be efficacious.

– It must be easy to administer and should not have undesirable secondary effects.

– It must be inexpensive.

– The way to use it should not be too complicated.

So far several anti-parasite medicines have been used:

– *Anti-parasite oil*: also called *chenopod essence* (the active principle is *ascaridol*). used since long, very efficacious; can be produced from local raw materials, but difficult to preserve (after three months, the amount of ascaridol drops) and to administer to children.

– *Piperazin*: an imported chemical. Inexpensive not toxic, but less efficacious (its anti-parasite effect is about 60 – 70%). Its mode of use (many tablets taken in three consecutive days) does not suit children in the countryside. *Piperazin citrate*, in the form of syrup, is more commonly used but is more expensive and difficult to preserve.

– *Oxygen*: used at some treatment centres, is efficacious (the ascarid, which lives in anaerobiosis, is paralysed if the milieu contains oxygen) but cannot be used on a large scale. The use of oxygen by way of the stomach must necessarily be practised in a hospital.

Of late we have imported a number of chemical products. Among them are *Decaris*, *Vermox* – considered as efficacious, non-toxic and easy to administer. But their high prices limit their use.

Some local products have been used as anti-parasite medicines (for example the bark of the root of *Melia azederach*, the grains of *Leucaeus glauca Benth*, etc.) These products have not yet been studied from the pharmacological, toxicological and clinical points of view, which prevents their mass production and commercialisation.

Santonin used in reduced doses and accidents due to ascarids

Santonin is a well-known anti-parasite in Vietnam. This medicine has been used for 150 years now (2), especially in European countries. However, in the Vietnamese countryside where reinfestation, especially among children, is frequent, the present dose and mode of use of santonin have proved inadequate. For 15 years now, researches by pediatricians (3), internists (4) and surgeons (5) have allowed us to conclude that the posology and mode of administration of this medicine (0.01 gr per year of age, or T + L) present some drawbacks: the percentage of expulsion of ascarids (from persons treated) is low and the effectiveness of expulsion (from 1/3 to

2. Pierre Lebeau – *Clinical Pharmacy* Vol. 2. 1946. pp. 1590-1596.

3. Đặng Nguyên Bình: "*Liver Abscess Due to Ascarids among Children.*" *Bulletin of Pediatrics of the General Medical Association of Vietnam* – February 1968. p. 18).

4. Nguyễn Văn Tấn: *Practical Medicine* – 2/1967.

5. Nguyễn Xuân Thụ: *Practical Medicine* – 1/1966.

1/5 of the total number of ascarids present in the intestines) is not high (6).

Remarks obtained through surgery and pathological anatomy

About 90 % of the cases of peritonitis caused by ascarids presented a cause-effect relationship with a reduced posology in relation to the number of parasites: the ascarids were not destroyed but rather excited, hence the accidents caused by their disorderly movements.

The child had to fast in the morning, before taking the medicine. This was a probable cause of the excitation and disorderly movements of the parasite due to the pH change in the intestinal milieu.

New posology of santonin

On the basis of the study by Dang Phuong Kiet and his collaborators of the massive deparasiting of children in Haiphong, and of researches conducted by *B Guenov* (1954) (7), we have applied a new posology for the massive deparasiting of children in Phung Cong commune.

– Our research was conducted on 184 children aged 2 to 7 belonging to families in 9 production brigades of agricultural co-operatives. The examination of their stool was positive for vermiform ascarids, and clinical examinations showed nothing

6. Đặng Phương Kiệt: *Lombar Ulcers Due to Ascarids Among Children and New Posology for Santonin* – *Pediatrics*, February 1966 pp. 62-72.

7 Guenov M Guenov, Vassil M Radoer, Karel Roussinov. *Anti-Parasite Medications* – Pharmachim, Bulgaria, 1972.

abnormal (no fever, no digestive troubles, no antecedent of hepatitis or nephritis):

– *Dose of santonin*: 0.015gr per year of age, for 24 hours. The children were divided into two groups: one group received one dose each, the other 2 doses (2days):

– Santonin: 0.015gr.

– Phenophtalein: 0.02gr (one packet per year of age).

Mode of administration: light meal (soup) at 4 p.m. At 8 p.m. the child took the dose in two times at one hour's interval. For example: for a child of 4, the total dose of santonin was 0.06gr in two intakes: 0.03gr at 8 p.m. 0.03gr at 9 p.m. The next morning, the child ate as usual. No purgative was taken.

– *Observation protocol* In each production brigade, a nurse observed the expulsion of ascarids for three consecutive days and daily recorded the number of ascarids expelled in the stool as well as any intoxication reactions; at the same time, a group of physicians stood by at the infirmary to treat any accidents that might happen.

Thus 181 children aged 2 to 7 were treated. The percentage of expulsion of ascarids was from 88.3% (a single dose) to 92.3% (2 doses). The number of ascarids expelled (in three days) per child was almost equal for the two groups: 14.4 – 14.8. These results accorded with those of researches conducted in Haiphong (8): among 195 children treated and watched

8. Dang Phuong Kiet: "Treatment of Infestations with Ascarids among Children by Santonin" *Practical Medicine*. 1969 pp. 16-19

	(0.015g/year) × (1 day)					(0.015g/year) × (2days)				
	Number of children treated	Average age (in years)	Number of children from whom ascarids were expelled	Percentage of expulsion of ascarids	Number of ascarids expelled per child	Number of children treated	Average age (in years)	Number of children from whom ascarids were expelled	Percentage of expulsion of ascarids	Number of ascarids expelled per child
Brigade 1	24	4.1	20	83.0	16.3	8	5.3	8	100 0	15.0
Brigade 2	23	3.7	23	100	15.6	8	4.3	8	100.0	15 4
Brigade 3	14	3.6	14	100	21.6	4	4.2	4	100.0	28 7
Brigade 4	—	—	—	—	—	15	4.8	15	100.0	27.8
Brigade 5	10	3.4	7	70.0	9.2	11	5.0	8	74.7	8 6
Brigade 6	3	4.0	3	100	18 3	7	3.8	7	100.0	14.2
Brigade 7	12	4 6	12	100	14.2	10	4.6	9	90.0	20
Brigade 8	16	5.1	11	68.7	8 8	6	5.3	4	66 6	18
Brigade 9	1	2.0	1	100	12.0	9	3.0	9	100.0	6
Total	103	3.8	91	88.3	14.4	78	4.5	72	92.3	14.8

ed for three days the percentage of expulsion of ascarids was from 78.1% (a single dose) to 91.3% (2 doses) and the average number of ascarids expelled per child was 14.

As in Haiphong we did not notice any case suggestive of intoxication by santonin, but only two cases of abdominal pain which disappeared after the expulsion of the ascarids and did not require any treatment. So far, the children treated have been found in good condition and show no symptom suggestive of a hepatic or renal lesion.

Reduction of morbidity by ascaridiosis

Our appraisal is based on the percentage of ascaridiosis symptoms among the same number of children before and after the massive deparasiting. We did not make an examination of the stool. Therefore is considered as affected by ascaridiosis any child that vomits ascarids or expels them in its stool, regardless of whether it has taken any anti-parasitic medicament or not.

According to that protocol, in summer 1976, we treated about 400 children aged 2 to 7 in Phung Cong commune, but were able to follow the results on only 181 children. Basing ourselves on the health records where the results of yearly check-ups were inscribed and on the files of consultations at the infirmary, we compared the percentage of the ascaridiosis signs of 1978 (before the massive deparasiting) with that of 1979 (one year after the deparasiting):

Age	Total number of children	Signs of ascaridiosis			
		Before the deparasiting (1978)		After the deparasiting (1979)	
		Number of cases	Percentage (%)	Number of cases	Percentage (%)
4 years	128	41	32.0	12	9.3
3 years	131	29	22.1	12	9.2
2 years	101	12	1.8	6	5.9
Total	360	82	22.7	30	8.3

Thus, before the massive deparasiting operation, the percentage of children aged 2 to 4 showing clinical signs of ascaridiosis (expulsion of ascarids through the mouth and in the stool) was 22.7% (82/360) Studies conducted with the same clinical method in Cao Duong commune (Ha Son Binh province – D.P. Kiet, 1972) and in Haiphong (Le Thi Sam, 1969) recorded almost the same percentages: 23.2% and 20.5%. One year after the deparasiting, among the same number of children and in the same environmental conditions, the percentage of infestation clearly dropped, to 8.3% (30/360). The difference is very significant from the statistical point of view: $P < 0.01$.

The same remarks had been made earlier in Ngo Quyen city ward, Haiphong (6): following the massive deparasiting of children below 7 years of age by santonin (new dose), the number of children suffering from acute accidents due to ascaridiosis

(abdominal pain, obstruction of bile ducts) admitted to the ward's hospital decreased threefold compared with the total number of children treated:

	Before the deparasiting (1966)	After the deparasiting (1969)
Total number of children treated	855	1,086
Number of children treated for accidents due to ascarids	81 (9.38%)	36 (3.3%)

The massive deparasiting of children had thus clearly reduced acute accidents due to ascarids. From a certain point of view, this is an efficacious method of prophylaxis.

Conclusions

1. Infestation with vermiform ascarids among children in Vietnam's rural areas is a widespread and grave morbid state: massive and periodical deparasiting, especially for children of the 2–7-year age group, to prevent acute accidents and improve nutritional conditions is an important and urgent problem.

2. Santonin, with the new posology and the new method of administration, can be considered as an efficacious medication in the present conditions. It is not expensive, is easy to apply on a large scale, and causes no hazards. The acclimatation of *Artemisis maritima* (from which santonin is extracted) can be undertaken in Vietnam and we may produce ourselves the anti-parasitic medicine.

Health condition of elderly people

PHAM KHUE
VO PHUNG

Examination was made of 364 out of a population of 416 persons aged 60 and more, among them 229 women and 135 men.

All of them were subjected to corporal measurement, complete clinical examination, radioscopy of lungs and heart, electro-cardiogram recording, and biochemical examinations comprising 13 parameters (hematocrit hemoglobinemia, speed of sedimentation, glycemia, uremia, protidemia, cholesterolemia, total blood lipids, Gros reaction, Mac Lagan reaction, proteinuria, glycosuria, and urinary urea).

State of Morbidity

The ailments recorded were classified according to the various systems:

– Circulatory	: 67	persons	(18.4 %)
– Digestive	: 96	–	(26.37%)
– Respiratory	: 42	–	(11.5%)
– Locomotor	: 52	–	(14.28%)
– Genito-urinary	: 11	–	(3.02%)
– Endocrinal and metabolistic	: 3	–	(0.82%)
– Cutaneous and sub-cutaneous	: 14	–	(3.84%)

These figures show that :

– Ailments affecting the digestive system were the most frequent (26.37%). Next came the ailments

affecting the cardio-vascular (18.4%), locomotor (14.28%) and respiratory systems.

– If one counts together those of the nervous system and the sensory organs (especially eye diseases) they affected the most people (203 persons, or 57.76%)

I. Ailments of the digestive system

Ailments	Men	Women	Total	%
Loss of many teeth	39	47	86	23.62%
Dental decay	2	2	4	1.09%
Gastro-duodenal ulcer	1	2	3	0.54%
Pyloric stenosis	1	0	1	0.27%
Enteritis	1	0	1	0.27%
Chronic colitis	0	1	1	0.27%
Total	44	52	96	26.37%

Remarks

– Among the ailments affecting the digestive system the most frequent were the loss of many teeth (23.62%) and dental decay (1.09%). Diseases of the dentition doubtlessly influenced digestion and led to other digestive troubles.

Gastro-duodenal ulcers, pyloric stenosis, enteritis and chronic colitis were not very frequent.

2. Ailments of the circulatory system

Ailments	Men	Women	Total	%
Arterial hypertension	26	35	61	16.7 %
Mitral insufficency	0	3	3	0.82%
Irregular heartbeats	0	3	3	0.82%
Total	26	41	67	18.4 %

Remarks

– Among the cardio-vascular ailments, arterial-hypertension showed the greatest incidence: 61 persons (16.7%), comprising 26 men and 35 women. It is worth noticing that in an internal-medicine ward of Bach Mai Hospital, Hanoi, of the 435 persons aged 60 and more hospitalised for various ailments, 117 (59%) were affected by arterial hypertension.

– The other cardiopathies were rather rare: 0.82% with mitral insufficency, 0.82% with irregular heartbeats. In developed countries, cardio-vascular ailments are particularly widespread and they account for more deaths than any other ailment.

– The results of electro-cardiographic examinations are reported in another article of this monograph.

3. Ailments of the respiratory system

Ailments	Men	Women	Total	%
Sinusitis	0	1	1	0.27 %
Exudative rhinitis	2	0	2	0.51 %
Chronic angina	1	0	1	0.27 %
Pneumonia	1	0	1	0.27 %
Bronchial asthma	6	1	7	1.92 %
Pulmonary tuberculosis	6	1	7	1.92 %
Chronic bronchitis	8	11	19	5.21 %
Bronchiectasis	2	2	4	1.09 %
Total	26	16	42	11.5 %

Remarks

– Among the ailments of the respiratory system, the most frequent were those affecting the bronchi (8.22%) including bronchial asthma (1.92%) and chronic bronchitis (5.21%). The same remarks had been made in the internal-medicine ward of Bach Mai Hospital where, among the 435 elderly patients, 24 were affected by bronchopathy. Chassagnon noticed that of 170 patients with ailments of the respiratory system, 62.3% had bronchopathy. Chronic bronchitis and ensuing pulmonary emphysema affected 10.3% of the aged patients in that ward, a figure almost similar to that given by O.GSELL.

– After bronchopathies came pulmonary tuberculosis (1.92%). Many doctors consider the latter to be fairly rare among the elderly. In reality, physicians of several countries, some with a fairly high living standard, have drawn attention to the relative frequency

of pulmonary tuberculosis among the elderly. At the internal-medicine ward of Bach Mai Hospital, of the 435 elderly patients, 14.19% suffered from that ailment. Different works have pointed to the dangerous character of this type of tuberculosis because it is fairly widespread and involves bacilli which are for the most part resistant to current anti-tuberculous products.

– Pneumonia was rare (0.27%) for the inquiry was conducted among a non-hospitalised population. On the contrary it was very frequent in the internal-medicine ward of Bach Mai Hospital: 23.23% of the affections of the respiratory system and 8.10% of elderly patients. Those were for the most part fairly grave broncho-pneumonia cases and were to be the direct cause of most deaths.

4. Ailments of the locomotor system

Ailments	Men	Women	Total	%
– Spondylarthrosis	11	17	28	7.69%
– Humatoid poly-arthritis	1	1	2	0.54%
– Scoliosis-cyphosis	5	4	9	2.47%
– Sciatica	0	1	1	0.27%
– Arthralgia	2	5	6	1.64%
– Lombalgia	1	4	5	1.64%
Total	20	32	52	14.25%

Remarks

– Arthropathies were mostly of a degenerative origin, and arthritis of an inflammatory origin was not frequent (0.54%).

– The most frequent arthroses were spondyloses responsible for lombalgia, cypho-scoliosis and neuralgias of the sciatica type. The frequency of arthrosis should be still greater if one had the possibility of making a systematic radiography of all the joints.

– Rhumatoid polyarthritis could also be observed among elderly persons and no doubt had an auto-immune nature. In effect, all authors agree on the frequency of auto-antibodies among the elderly and their number increases with age.

– Osteoporosis, certainly frequent, is not mentioned here because of the lack of systematic radiography of the whole skeleton. It is the cause of most fractures among the aged, the most serious cases involving the neck of the femur.

5. Other ailments

a) Ailments of the uro-genital system

Ailments	Men	Women	Total	%
– Genital prolapse	–	8	8	2.19%
– Cancer of the testicles	1	–	1	0.27%
– Inguinal hernia	2	–	2	0.54%
Total	3	8	11	3.0%

– These ailments were relatively infrequent. But in hospital wards they were not rare, most cases being glomerulonephritis. In the internal-medicine ward of Bach Mai Hospital, out of the 435 elderly patients, 15 were affected by chronic glomerulonephritis.

– Contrary to statistics in developed countries, affections of the prostate (prostatitis, adenoma, and cancer of the prostate) were not frequent.

b) Endocrinian and metabolic ailments

– 3 women were affected by simple goitre (0.82%).

c) Skin diseases

– 10 cases of eczema (2.74%), 2 cases of trichophytia (0.54%) and 1 case of scabies (0.27%) were found. Other dermatoses affected 3.84% of the persons examined.

– These dermatoses show no particular features among elderly persons. Gerontologists lay emphasis on atrophy of sub-cutaneous tissues, senile pigmentations and delay in cicatrization.

d) Ailments of the sensory organs

Ailments	Men	Women	Total	%
– Medium otitis	0	2	2	0.51%
– Trachoma	5	3	8	2.19%
– Entropion	18	53	71	19.53%
– Pterygion	36	55	91	25.12%
– Scars on the cornea	1	3	4	1.09%
– Senile cataract	1	2	3	0.82%
– Retinal degenerescence	2	3	5	1.37%
– Amaurosis	1	2	3	0.82%
– Parkinson	0	1	1	0.27%
– Deafness	5	10	15	4.11%
Total	69	134	203	55.86%

emarks

– Eye diseases were very frequent, especially trachoma (2.19%) and its consequences like entropion (19.53%), peterygion (23%), scars on the cornea (1.09%), etc. The lack of hygiene was of course the main cause.

– 4.11% of the old people examined were deaf Hypoacousis was very frequent: supply of acoustic aids is a problem to be resolved.

– Among diseases of the nervous system, there was one Parkinson case (0.27%). If a neurological examination by specialists could be made, the number of ailments of the nervous system would surely have been higher. Out of a population aged 65 and more, C. BALLIER found at least 15% with neuro-psychiatric affections. Vascular cerebral accidents particularly frequent among aged people were found most often in hospitals: in the internal-medicine ward of Bach Mai Hospital, out of the 435 aged patients, 20 had suffered from ailments of the nervous system, including 17 vascular-cerebral accidents

6. Biochemical examinations

– Biochemical examination was conducted systematically among all aged persons according to the Suchet method, and included 13 parameters. We consider as pathological a hematocrit lower than 35%, a hemoglobinemia lower than 10g%, a speed of sedimentation higher than 9mm in the first hour, a glycemia higher than 130mg% or lower than 85mg%, an uremia higher than 50mg%, a protidemia lower

than 070mg%, a cholesterolemia higher than 220mg%, lipidemia higher than 660mg%, a Gros reaction lower than 1.7ml, and MacLagan reaction higher than 5 units.

– The results obtained are summed up as follows:

	Men	Women	Total	%
Hypohemoglobinemia	35	52	87	23 90%
Speed of accelerated sedimentation	37	74	111	30.49%
Hyperglycemia	1	2	3	0 82%
Hyperuremia	0	4	4	1.09%
Hyperlipidemia	11	19	30	8.24%
Positive Gros reaction	0	2	2	0.54%
Positive MacLagan reaction	7	26	33	9 06%
Proteinuria	5	11	16	4.39%
Glycosuria	0	0	0	0

Remarks

Anemia (hypohemoglobinemia) was relatively frequent (23.90%). All gerontologists agree on the frequency of anemia among the elderly. We have not come across any case of Biermer anemia, which however, is frequent in other countries, as Chassagon has found it in 16 out of 24 anemic persons. If one bases oneself on globular count, the percentage of anemia would be still higher. Thus in the internal-medicine ward of Bach Mai Hospital, out of 393 aged patients 81.59% had less than 4 million red blood cells; 34.6% less than 3.5 million, and 16% less than 3 million. The average number of red blood

cells in those 393 patients at Bach Mai Hospital was 3,290,000. Now, according to H. Beck, the average number of red blood cells of men aged upwards of 65 is 4.7 million $\pm$ 0.47 and that of women, 4.62 million $\pm$ 0.55.

Hyperlipidemia was found among 8.24% of the elderly persons examined. At Bach Mai Hospital, the average rate of cholesterolemia was 195mg% : 58% belonged to the safe zone (less than 200 mg%), 33% to the alarm zone (200–300mg%), and 9% to the danger zone.

Proteinuria was found in 16 persons (4.39%).

Health condition

The elderly people examined underwent corporal measurements, especially of weight, height, chest circumference, Pignet index, QVC (height minus chest circumference with forced inspiration, plus the circumference of the right thigh, plus the circumference of the flexed right arm, in centimetres).

I. Results of the measurements:

Evaluation of health condition made according to criteria established by the Health Ministry:

Categories	Men	Women	Total	%
A (Good)	5	6	11	3 03%
B (Average)	50	59	109	29.94%
C (Poor)	80	164	244	67.03%

Remarks

According to the corporal measurements, most of the elderly persons (67.03%) had a poor health condition. This conforms to the nature of genescence which is a slow and progressive decrease of the active metabolic mass.

The health condition of the women was lower than the men's: 71% of the women were in Category C as against 60% of the men.

2. Evaluation of health condition according to diseases

According to the criteria established by the ministry of Public Health, the persons examined may be put into three categories:

Categories	Men	Women	Total	%
A (good)	32	40	72	19.78%
B (average)	70	135	205	56.31%
C (poor)	33	54	87	23.90%

Remarks

From the point of view of morbidity, most of the old people in Phung Cong commune belonged to Category B (average).

3. Overall health condition

To assess the overall health condition, we combined the results of measurement with those of the morbidity record according to the standards set by the Health Ministry:

Condition according to measurements	A	A	B	A/B	C	C
Condition according to the morbidity record	A	B	A	C	A	B
Overall health condition	A	B	B1	C	B	C1

Results of evaluation of overall health condition

Categories	Men	Women	Total	%
— Category A	0	3	3	0.82%
— Category B1	11	16	30	8.20%
— Category B	19	57	106	29.12%
— Category C1	52	110	162	44.50%
— Category C	20	43	63	17.36%

Remarks

— On the whole, the health condition of old people in Phung Cong commune was poor, as 61.86% of them belonged to Category C and C1. Category A made up only 0.82% of the population and Category B, 37.32%.

– Basing ourselves on the living and dietary conditions and the cultural standard, we can put those old people in Phung Cong commune into three classes :

– Class I, with a high living standard : 241 persons (68.6%)

– Class II, with an average living standard : 65 persons (17.7%).

– Class III, with a low living standard : 41 persons (13.6%).

Comparing the health condition of those people with their living standards, we obtained the following results :

Health Condition	LIVING STANDARDS			
	Class I	Class II	Class III	Total
Category A	2	1	1	4
Category B1	22	3	2	27
Category B	73	21	10	104
Category C1	117	25	15	157
Category C	27	15	13	55
Total	241	65	41	317

We note that the correlation is not clear : Categories C1 and C (poor health) related to class I (with a high living standard) with 144 persons (67.80%), to Class II (average living standard) with 40 persons

(18.8%), and to class III (low living standard) with only 28 persons (13.2%). Thus not all persons of Categories C1 and C (poor health) belonged to the class with a low living standard. The reasons perhaps lies in the fact that the high living standard of those people is only relatively recent, and that they formerly lived in poor conditions

Electro-cardiograms of old people

PHAM KHUE
NGUYEN LAN VIET

Three hundred and fifty-six persons aged upwards of 60 – 135 men (37.9%) and 221 women (62.1%) – were the object of a systematic electro-cardiagraphic study.

Three hundred and sixteen of them, comprising 123 men and 193 women, were aged 60 to 74, 39 (12 men and 27 women), 75 to 89, and a woman, 90. All of them, except one, were farmers. The exception was a practitioner of traditional medicine.

Normal electro-cardiogram

162 (42.7%) comprising 55 men and 107 women.

Electro-cardiographic anomalies

Anomalies concerning the A. QRS electric axis:

- left axis 32
- leftward bend 19

} 51 (14.3%)

- right axis 5
- rightward bend 5

} 10 (2.8%)

Anomalies concerning rhythm:

- Sinusal tachycardia : 11
- Sinusal bradycardia : 21
- Auricular extrasystole : 3
- Ventricular extrasystole : 3
- Auricular fibrillation : 3

Anomalies concerning conduction :

- Minor troubles of intra-ventricular conduction : 34
- Complete obstruction of the right bronchus : 10
- Incomplete obstruction of the right bronchus (no obstruction of the left bronchus). : 22
- First-degree obstruction of the auriculoventricular conduction : 3

Cardiac hypertrophy:

- Right auricular hypertrophy : 17
- left auricular hypertrophy : 2
- right ventricular hypertrophy : 5
- left ventricular hypertrophy : 6

Other anomalies:

- Cardiac position with backward bend : 14
- Myocardic ischemia:
  - minor : 6
  - medium : 8
  - major : 1
- Presence of a huge U wave : 1

Remarks

– Electro-cardiogram normal in 42.7% of the cases. This figure ranks between those given by Doan Yen (75.47%) and Nguyen Xuan Luong (28%).

The most frequent anomalies recorded were:

- Leftward bend of the axis: 14.3%
- Troubles of intra-ventricular conduction: 19.4%
- Low voltage in peripheral derivations: 9.8%

The leftward bend of the electric axis may be related to arterial hypertension. In effect, the percentage of old people affected by hypertension at

Phung Cong was 16.7%, and most of the hypertensive had an axis bent leftward on the electro-cardiogram.

The troubles of intra-ventricular conduction were probably related to atherosclerosis, relatively frequent among old people. In effect, hyperlipidemia affected 8.24% of old people at Phung Cong. At Bach Mai Hospital, we have found hyperlipidemia among elderly patients: 25.3% of the cases in the alarm zone, and 36.9% in the danger zone.

The frequent low voltage was due most often to senile amphysema, a relatively frequent ailment.

– Auricular fibrillation was found in two women and a man of 80. The causes were mostly coronary atherosclerosis and cardiosclerosis. In most cases, cardiac hypertrophy was right auricular hypertrophy probably related to a chronic pulmonary heart.

Left ventricular hypertrophy was not very frequent (2%) compared with the figures given by Doan Yen (13%). It was especially due to arterial hypertension.

Biochemical variations in the blood and urine of elderly people upwards of 60

PHAM KHUE
LUONG TAN THANH

In 1978, during clinical consultations organised by the internal-medicine department of the Hanoi Medical College for the population of Phung Cong commune, Ha Son Binh province, our service conducted systematic biochemical examinations on 1,275 inhabitants including 267 persons aged 60 to 93. We then compared the results with those of examinations conducted in other communities within the framework of our gerontological surveys.

Material and methods

– *Persons examined*: 267 persons among them:
– men 60 to 82: 92 (34.46%)
– women 60 to 93: 175 (65.54%)

– *Method of analysis*: Systematic biochemical examinations of clinical orientation according to Suchet (of the Rothschild Foundation, Paris).

– *Examinations* (see table 1 on page 112)

These analyses enabled us to track down infectious anemic syndromes, diabetes mellitus, ailments of the kidneys or the liver, troubles of lipidic or protidic metabolism...

– *Reference values.* To interpret the results of our analyses we referred to the following data:

Table 1

No.	Examinations	Techniques applied
1	Uremia	Photometric dosage using reaction to diacetylmonoxime
2	Glycemia	Photometric dosage using cuproalkaline reaction
3	Total proteinemia	Photometric dosage with the biuret
4	Total lipidemia	Photometric dosage using phosphovanilic reaction
5	Total cholesterolemia	Photometric dosage using Lieberman reaction
6	Gros reaction	Suchet's micro-drop technique
7	Mac-Lagan reaction	Nephelemetric technique
8	Speed of blood sedimentation	Suchet technique, using graduated small tubes.
9	Hematocrit	Suchet technique with graduated small tubes.
10	Rate of hemoglobin	Photometric dosage with Drapkin reagent
11	Proteinuria	Detection by sulfosalicylic acid
12	Urine-reducing sugars	Detection by Benedich reagent
13	Urinary urobilinogen	Detection by Ehrlich reagent.

– Results of examinations conducted with the Suchet method and on blood donors of the hematology and blood transfusion ward of Bach Mai Hospital (1977).

– Results of examinations conducted on healthy adults (hospital staff and students) with classical techniques (1977).

– Results of examinations conducted on students of the Health Workers School of the hospital, with the Suchet method (1979).

– Accounts of the Symposium on Biological Constants among Normal Vietnamese (Ministry of Public Health, 1969), and

– Results of systematic examinations made by Suchet himself.

Proceeding from those data and from clinical experience, we consider as pathological the following values:

– Hematocrit 35%
– Rate of hemoglobin 9.5g/100ml
– Speed of sedimentation : Man 6mm
Woman 12mm
– Uremia 50mg/100ml
– Glycemia 80mg/100 ml
or 150mg/100ml
– Total proteinemia 6.5mg/100ml
or 8.5mg/100ml
– Total lipidemia 0.35g/100ml
or 0.75g/100ml
– Total cholesterolemia 120mg/100ml
or 250mg/100ml
– Gros reaction 1.7ml
– *MacLagan* reaction 5 *MacLagan* units

Results and interpretations

Health index (HI)

According to Suchet, the health index is reckoned according to the formula:

$$H.I. = \frac{\text{Number of normal reactions among sound people}}{\text{Number of abnormal reactions.}}$$

Are considered sound people who do not show any abnormal response.

Table 2. Health index of communities examined by the clinical biochemistry service of Bach Mai Hospital in 1978–79.

Communities	Number of people examined				Number of sound people	Health index
	Total	Men	Women	Age		
Inhabitants of Phung Cong aged upwards of 60	267	92 34.5%	175 65.5%	60–93	29 10.9%	0.64
Inhabitants of Phung Cong below 60	1,008	387 38.4%	621 61.6%	14–59	349 34.6%	3.53
Inhabitants of Phuong Duc (Ha Son Binh)	139	156 35.5%	283 64.5%	5–36	194 44.2%	5.76
Personnel of a stockbreeding State farm at Van Dien	75	25 33.3%	50 66.7%	18–35	32 4.7%	6.64

Communities	Number of people examined				Number of sound people	Health index
	Total	Men	Women	Age		
Personnel of a State shop serving foreigners, Hanoi	137	64 46.7%	73 53.3%	19–76	39 28.5%	3.14
Personnel of a printing office, Hanoi	102	53 52%	49 48%	18–53	52 51%	8.29
Personnel of the Van Dien sugar mill	741	396 53.4%	345 46.6%	20–56	264 35.6%	4.12
Students of the Health Workers' School of Bach Mai Hospital	191	12 6.3%	179 93.7%	18–26	130 68.1%	15.37

Table 3

Health index in some communities by Suchet.

Communities	Total	Sound	Health index
Personnel of a laundry	153	39 (25.5%)	2.20
Nurses of A.P	489	176 (36.1%)	4.28
Embassy staffers	65	28 (13%)	6.17
Employees of a financial establishment	88	51 (58%)	11.41
A group of young adults	86	53 (61.6%)	17.50

We noticed that the health index of old people in Phung Cong commune was the lowest, in fact very low, sound people making up only 10.9% of the persons examined.

Percentage of anomalies recorded: (see table on next page)

Table 4 shows that:

– On the whole, the frequencies of abnormal responses among old people of Phung Cong commune were the highest, particularly with regard to decrease in the rate of hemoglobin (51.7%), increase in the speed of sedimentation (60.8%), and the MacLagan reaction (40%).

– Proteinuria cases were fairly numerous (7.86%).

– Cases of high lipidemia and cholesterolemia were also more numerous than in other communities, but much less so compared with the Suchet data, that is, among Europeans.

– No case of glycosuria. Comparing the results with those obtained by Suchet we noted:

Table 4

Communities	Number of persons examined	Reduced hematocrit (%)	Rate of reduced hemoglobin (%)	Speed of accelerated sedimentation (%)	Increased uremia (%)	Reduced proteinemia (%)	Increased glycemia (%)	Increased lipidemia (%)	Increased cholesterolemia (%)	Positive MacLagan reaction (%)	Proteinuria (%)	Glycosuria (%)
Old people of Phung Cong	267	9.89	51.7	60.8	7.49	2.61	6.37	10.2	1.9	40	7.86	0
Inhabitants of Phuong Duc	139	11.1	5.57	26.2	2.05	1.11		1.83	—	32.3	3.25	0.46
Van Dien stock-breeding farm	75	6.76	16.2	16.2	5.33	0	0	4	0	28	0	0
State shop for foreigners	137	19.3	11.8	29.1	0	7.35	0.73	0.71	0	25.6	2.92	0
Printing office	102	9.18	3.06	31.8	0	0	1	0	0	19.6	3.92	0
Van Dien sugar mill	711	9.28	7.91	43.5	0.91	1.76		2.58	2.41	21	4.59	0.1
Health Workers' School	191	15.3	13.7	16.8	0.52	0	2.09	0		1.05	0	0
Suchet communities	9.436	2.5		18	1		3.5	1	32	1	1	4

— A high percentage of cases of reduced hematocrit and increased uremia and of proteinuria

Table 5

Age *Hematocrit* *Speed of sedimentation* *Rate of hemoglobin*

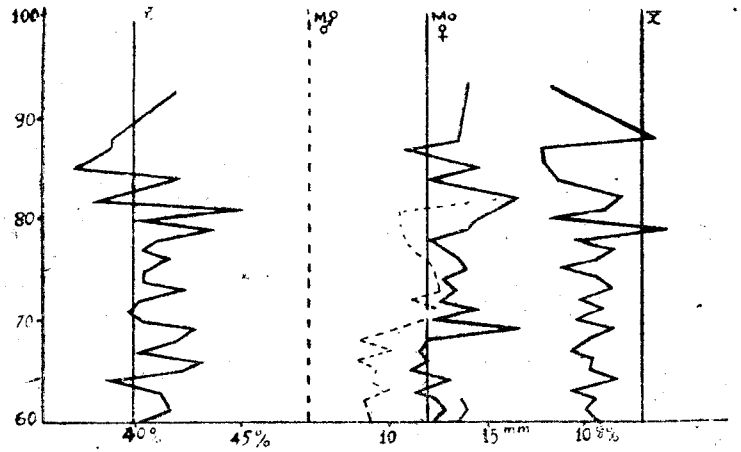


Table 6

Age *Total lipids* *Total cholesterol*

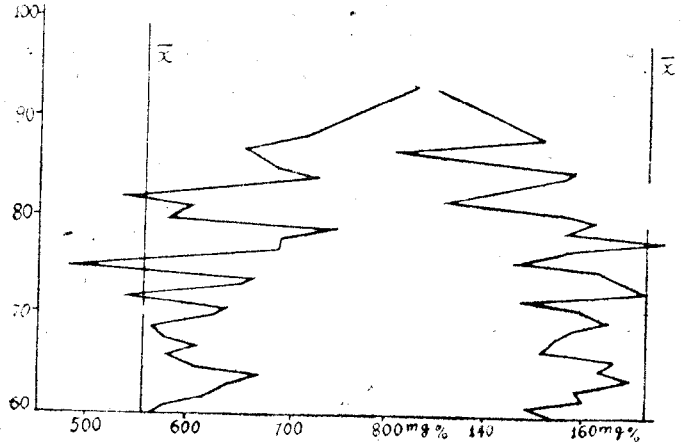


Table 7

Age *Urea* *Glucose* *Total proteins*

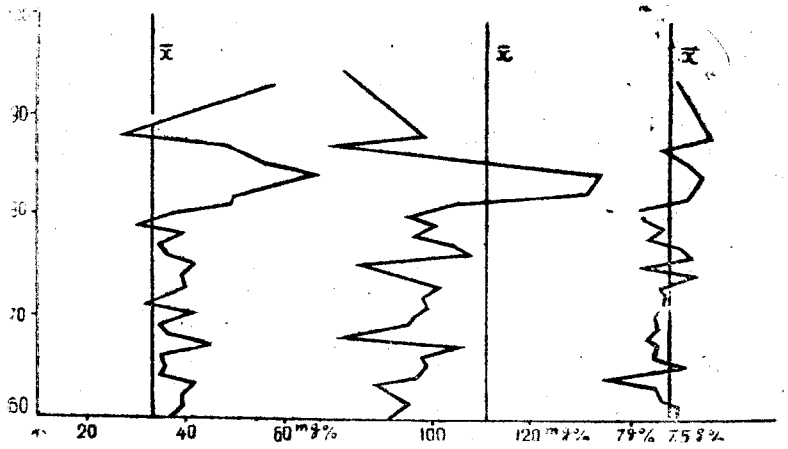
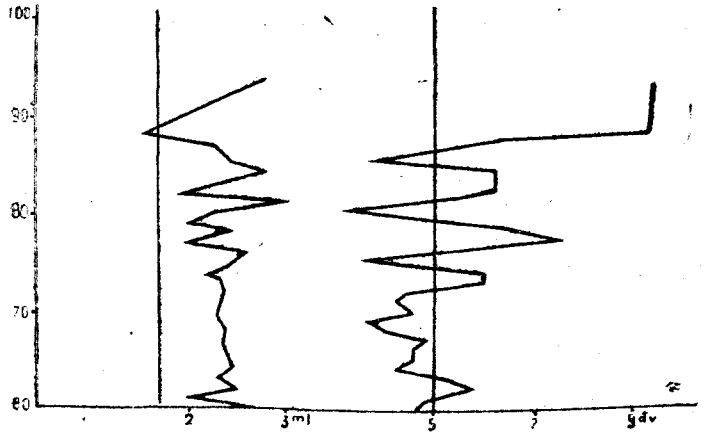


Table 8

Age *Gros reaction* *MacLagan reaction*



– Numerous cases of increase of the speed of sedimentation.

– Much less frequent increase of cholesterolemia even in relation to the lowest percentage.

The curves (on pages 118-119) show average magnitudes in functional relation to age (compared with results obtained among blood donors).

Table 5 : for hematocrit, speed of sedimentation and rate of hemoglobin.

Table 6 : for total lipids and total cholesterol.

Table 7 : for urea, reducing sugars and total proteins.

Table 8 : for the Gros and MacLagan reactions.

We put the persons examined into two groups :

– Group I comprising persons aged 60 to 79

– Group II comprising persons aged 80 to 99.

The comparative study of the curves of average magnitudes in relation to age shows that :

– Total proteins did not present any notable variations for either group.

– Few variations in functional relation to age for the speed of sedimentation, but for both sexes, oscillations tended to grow with age. We also noted that the difference between the speed of sedimentation in men and that in blood donors was always much higher than in women.

– For the other examinations there were always big variations, sometimes considerable for group II; in particular total lipids and the MacLagan reaction began to fluctate from the age of 75.

– A noteworthy detail : above 75 years of age, whereas total lipids tended to increase, total cholesterol lowered little by little.

Compared with the averages of blood donors :

– Hematocrit, total proteins, and MacLagan reaction oscillated around the averages.

– The speed of sedimentation in women, urea and total lipids were located to the right – that is, higher.

– The speed of sedimentation in men and the Gros reaction were located to the right – that is, clearly higher.

– Glucose and the rate of hemoglobin were located to the left – that is, lower.

– Cholesterol was to the left, that is, clearly lower.

– Average of cholesterolemia and total lipidemia compared with the other communities (all were determined by the Suchet method). – Table 9.

Table 9

Communities	Cholesterolemia (mg%)			Lipidemia (mg%)		
	n	x	s	n	x	s
Old people of Phung Cong (1978)	261	157.57	27.22	250	606.0	108.87
Blood donors at Bach Mai Hospital (1977)	200	185	36	200	559	102
State shop for foreigners (1977)	136	181.28	19.41	137	606.35	7[illegible].55
Printing office (1977)	100	166.81	18.91	101	506.14	53.36
Stockbreeding farm (1978)	75	157.41	17.41	76	566.8	97.64
Health Work rs' School (1979)	—	—	—	191	526.6	75.52

The cholesterolemia rate was lowest among old people in Phung Cong commune, but that of lipidimia was highest with very big variations (s = 108.9 mg %).

Conclusion

From a number of systematic examinations following the Suchet method, we came to the following conclusions:

– The health condition of persons aged upwards of 60 in Phung Cong commune left much to be desired, the health index being very low (0.64).

– The speed of increased sedimentation (60.8%) and the rate of diminished hemoglobin (51.7%) show that infectious or parasitic diseases and anemia were the primary causes.

– Diseases caused by functional troubles or organic lesions of the liver and kidneys, by troubles in the respiratory function such as asthma, bronchitis pulmonary tuberculosis... were also important causes

– Atherosclerosis, the result of the increase in seric cholesterol, was not an important cause, although among old people the cholesterolemia rate (1.9 %) was higher compared with other age brackets. Compared with European figures, however, this percentage is much lower than the lowest figure (7.1 %) obtained by Suchet.

It is to be noted that, above the ages of 75-80, cholesterolemia tended to diminish while lipidemia increased gradually. Another characteristic feature: average seric cholesterol among old people was clearly lower than that of adults below 60 years of age.

Lastly, no case of diabetes mellitus was recorded among people above 60 years of age.

Detecting the source of contagion of tuberculosis

HOANG LONG PHAT,
NGUYEN VAN HAN
and COLLABORATORS

This investigation was aimed at studying the source of contagion and assessing the degree of infection with tuberculosis in 50 children suspected of tuberculosis with Mentoux intradermo-reaction positive for the first time.

Object of study and method

Clinical examination was made by specialists of the Central anti-T.B. Institute and the Anti-T.B. station of Hai Hung province, on 43 families with 50 children suspected of primo-infection – 234 out of a total of 240 persons (97.3%); 37 families had all their members examined.

Radiography of the lungs was made by the Radiologic service of the Anti-T.B. Institute on 206 persons (88%). The results of the reading of films obtained by the radiologists were discussed with the clinicians.

The direct examination of spittle (phlegm) for Kock bacilli was made by the bacteriological laboratories of the Anti-T.B. Institute on 32 persons. Spittle samples were taken twice: the first time immediately, the second time, the next morning. The two samples were coloured according to the Ziehl-Nielsen technique by two laboratory technicians, one of them being a specialist.

The period of examina ion spread from December 17, 1977 to January 6, 1978, during which no epidemic broke out in that region.

Results

– Coughing : 46/140 persons aged 15 and more (rate 32.8%) of whom 41 had been coughing for more than 4 weeks (29.2%).

– Expectoration : 32 persons (22.8%)

– K.B. (+) in direct examination : newly found in one person (1/32 – rate : 3.1%). Compared with clinical examination : 1/234 (0.42%) ;

– Stabilized phthisical pulmonary lesions : 2 persons.

– Evolutive phthisical pulmonary lesions : 3 persons, all being chronic fibro-cavity patients (rate : 1.4% – 3/206), among whom 2 were newly detected, or 0.96% (2/206).

Sources of contagion outside the family

– 2 persons under T.B. treatment, both with evolving fibro-cavity forms, one with K.B. in spittle.

– 2 persons under T.B. treatment ; at control examination, one case had been stabilized, the other showed an over-infected bronchiectasis ; both with no K.B. in their spittle.

– one normal person.

Besides, among the 19 members of the suspected families, 4 could be sources of contagion : 3 had died (the first from phthisis in an anti – T.B. hospital, the second from an asthma fit, the third of old age), while the fourth one, a 76-year-old woman, was too weak to be examined.

Thus, we detected :

– 9 sources of contagion (50% compared with the families' declarations)

– stabilized tuberculosis : 3

– evolving tuberculosis : 6 (one died, having been a source of contagion both within and outside his family).

– K.B. (+) 2 cases ;

– source of contagion in the family : 3/9 (rate : 1/3).

– source of contagion out side the family : 3/9 (rate : 1/3) ;

– source of intra and extra-family contagion : 3/9 (rate 1/3)

Number of children in contact with obvious sources of contagion : 15/50 (rate : 30%).

– **Sex**

male : 5 (evolving tuberculosis : 5 cases including K.B. (+) : 1)

female : 4 (evolving tuberculosis : K.B. (+) : 1)

– *Age* : 8 persons older than 46 (5 men, 3 women) one 22-year-old woman with evolving tuberculosis, K.B. (+).

Family relations with the children :

– Grand-father : 3 (all three with evolving T.B. form)

– Grand-mother : 2 (stabilized T.B.)

– Father : (evolving T.B.)

– Neighbour : 3 (2 with evolving T.B.)

Places of contagion

– Ben hamlet : 5 sources

– Dai hamlet : 2 sources

– Khuc hamlet : 1 –
– Ngoc hamlet : 1 –

Discussion

Sources of contagion

One of the important factors in diagnosis, treatment and prophylaxis of primo-T.B. infection in children, is to detect and treat the sources of contagion. According to classical documents, the intra-family source is more dangerous than extra-family source, while K.B.-carrying street dust is only secondary.

In 1920, Léon Bernard and R. Debré found that in 250 tuberculous children 74% had been contaminated by family members and neighbours; 18% had had more or less frequent contacts with T.B. patients; for 8%, the source of contagion was not found.

In 1955-58, Léon Bernard detected in 1000 hospitalized children 596 cases, including 550 cases contaminated by family members or neighbours. In 1956, Hige reported the case of a school-teacher who had contaminated 300 little girls, of whom one-third had been vaccinated with BCG.

In Vietnam the sources of T.B. contagion of children were relatively frequent in various investigations.

In 1960, Vu Thi Chin and her collaborators found contagion in 229 out of 556 children under 3, with a positive intra-dermo Mantoux reaction (41.18%)

– Family contagion : 35.61%
– Extra-family contagion : 5.57%

In 1963, at Hospital K. 71, Thanh Hoa province Nguyen Lang found 5/14 cases of tuberculous meningitis with sources of contagion, i.e. 35.6%:

– contagion in the family : 80%
– contagion from neighbours : 20%

In 1976, at the anti-T.B. Institute, Nguyen Van Xuan found among children under 15 with tuberculous meningitis, either simple or associated with other T.B. forms, being treated in the pediatric ward, 23 children with a source of contagion (52.%): 16 children with family members infected with T.B. (36.%); 7 others had been contaminated by tubercular neighbours (19.9%).

The investigation we made at Phung Cong showed a fairly high rate of children with a source of contagion (30% of cases).

A prevailing feature was that nearly all the sources of contagion were persons above 46 (8/9 cases) and that the male sex is more often affected by evolving T.B. (in 6 cases of evolving T.B. there were 5 men above 46 : one newly detected and with K.B. (+) in his spittle ; one died of T.B.; 3 others were still undergoing anti-T.B. treatment).

In the families, the source of contagion was more frequently the grand-father than the grand-mother or the fathers; none of the 50 children had been contaminated by his mother. We agree with Gerbeaux that T.B. contagion of the child by the father or mother is less frequent than by the grand-father or grand-mother, who can have many grand-children and contaminate them successively on the occasion of their visits to them. The paternal grand-father and grand-mother of a child can be at the same time the maternal grand-father and grand-mother of another child, and thus become sources of contagion

outside the family. On the 9 sources of contagion found, the rates of intra or extra-family contagion and those of simultaneously intra and extra-family contagion were equal (one-third of cases).

The problem of coughing and expectoration and the tracking down of T.B. on persons living in families having children suspected of primo-infection

Spittle is the source of dissemination of K.B., and consequently a very dangerous source of T.B. contamination. Since 1956, in Vietnam we have adopted the policy of tracking down the source of contagion mainly by direct examination of spittle (phlegm).

At the 14th international anti-T.B. congress held in New Delhi in 1957, the Vietnamese phthisiologists presented their experience on this problem. At the 9th W.H.O. congress of phthisiologists held in Geneva in 1973 and the First congress on T.B. in African countries held in Cameroon in 1973, it was also emphasized that the prime problem is to track down T.B. in chronically coughing and spitting patients.

The coughing and spitting coefficient varies according to the season (influenza), the habits of the local population (smoking cigarettes or the water pipe). The rate of positiveness in the examination of spittle, (K.B. +) found in coughing and spitting persons, varies according to the regions and the situation of the anti-T.B. struggle in each of them.

The results of investigation made in some regions showed a coughing and spitting rate of between 5 and 15%, and a K.B. positive rate in spittle of between 0.7 and 4%.

Authors	Places of investigation	% of coughing and spitting persons	% of K.B. in coughing and spitting persons
Nguyen Hoang Trinh (1966)	23 villages in Vinh phuc prov.	5.7	3.03
Nguyen Viet Phuc anh Pham Van Ngu — 1969	Phu Dong village Gia Lam Hanoi	7.5	0.75
Truong Van Trong 1972	Truong Thinh village. Ha Nam Ninh	15.7	0.74
Hoanh Long Phat 1976	Medical post, Ba Dinh dist. Hanoi	6.2	0.94
Pham van Chan, 1977	Hop Tiên village Ha Son Binh	4.79	3.75
Le Ba Nhan and collaborators, 1977	Thuy Phu village Binh Tri Thien	—	4

At Phung Cong, the coughing and spitting rate in families of children suspected of primo-T.B. infection was relatively high (22.8%). However the K.B.+ rate found was within the limits cited above (3.1%). corresponding to the K.B. + coefficient in spittle (from 0.7 to 4%).

Conclusion

— The rate of proven sources of contagion found in 50 children suspected of primo-infection was 30 %. The sources of contagion in families and neighbourhood were about equal.

The detection of sources of T.B. contagion is most important for diagnosis, therapy and prophylaxis of primo-infection.

Aged persons, chiefly paternal grand-fathers, and coughing and spitting persons with more-than-four-week-old symptoms are to be watched for the detection of sources of T.B. contagion.

Goitre and its treatment by pig thyroid preparations

PHAN VAN DUYEN, DAO NGOC PHONG, DANG KIM LANG, NGUYEN VAN HINH

Endemic goitre is met in almost all countries in the world. This disease has been observed in Vietnam chiefly in the mountain regions and the uplands: it is not often met in the coastal regions. In the mountain regions, goitre is caused mainly by lack of iodine in the environment, which is its main etiological factor. Other causes have been mentioned, such as hard water, polluted water, goitrogeneous factors or anti-thyroidian substances.

Goitre in mountain regions has been studied by many Vietnamese and foreign specialists, but goitre in the delta is still little known in our country, though it has attracted the attention of some experts and epidemiological, pathogenic and prophylactic studies of this subject are problems of first importance.

This work deals with:

– a clinical and paraclinical study of goitre in the delta;

– the therapeutic application of a preparation derived from pig thyroid;

– a preliminary study of some factors in relation to this disease.

Material and method

The study concerned 79 goitrous persons at Phung Cong – 15 men and 64 women. The division per age group was as follows:

Age groups	*Frequency*
16 years	6
16 – 25	16
26 – 40	22
41 – 60	20
over 60	0
total	64

All the subjects were clinically examined with a view to identifying the disease and determining the thyroidian function.

The classification of goitre by WHO is as follows:

– Degree 0 Without goitre

– Degree I palpable goitre, subdivided into 2 degrees: Ia, Ib

– Degree II Goitre visible in the normal position of the neck

– Degree III very swollen goitre

The test of fixation of iodine 1-131 by the thyroid gland was done according to the standard technique of the clinic of nuclear medicine of Bach Mai hospital (Stanbury method).

Assessment of environmental factors

– The hardness of the water of ponds and wells was determined by the Trillon B method of the Department of Hygiene and Epidemiology of the Hanoi Medical College;

– The pollution of water – organic matters NH_3 – NO_2-by the technique of the same department;

– The dosage of iodine in water, by the micro-analysis method (Institute of Hygiene and Epidemiology).

The pig thyroidian extract was in three forms: powder, tablet, sugar-coated pill, according to the technique of the laboratory of the Pharmaceutical Factory No.1 in Hanoi.

The test treatment and the assessment of the results were made at the clinic of nuclear medicine of Bach Mai hospital.

Results Clinical characteristics

Degree and form	Number of cases	Proportion %
– Ia – Ib	51	64.5
– II	14	17.7
– Nodular goitre	12	15.4
– Mixed goitre	2	2.4
Total	79	100 %

All the cases were goitres with enthyroidy, the hyperthyroidic sign being not observed clinically.

Indices of radioactive iodine

All the clinically determined goitres were subjected to the test of fixation of iodine 1-131 by the thyroid after 2 hours and 24 hours:

after 2 hours	9.8 ± 5%
after 24 hours	25.6 ± 10%

This iodine fixation was thus within the normal limits of the enthyroid patient, without iodine deficiency.

Comparison of the fixation of iodine I-131 by the thyroid among the inhabitants of some regions

Region	Iodine content of food ration (mg/litre)	Fixation of iodine in 24 hours (%)	Authors
Mountain region with endemic goitre — Ngân son (Bắc Thái) — Ham Yen (Ha Tuyen) — Kim Sơn (Hoa Binh)	< 1	66 — 80 53.3 70 — 80	Phan Van Duyet Hoang The Long (1971)
Delta without endemic goitre — Hanoi — Ha Tay — Quang Ninh (coast)	7-9	32.5 (15 — 50) 32.7 (1.6) 30.2 (1.9)	Ph. V. Duyet and col. (1971) H.T. Ho, 1978
Phung Cong : with goitre in 10% of population	5.2 — 5.3	—	Phan Văn Duyet and (collab. 1978)

The demand for thyroidian preparations for the treatment of some hypothyroidies and the simple goitre has increased more and more, particularly after the suggestions made by Phan Van Duyet and collaborators regarding the cause and therapy of goitre in the delta, which sensibly differs from goitre in mountain regions :

Their production is made according to the following technique :

Raw materials

The thyroid gland must be extracted intact and kept at temperatures varying from 0° to 5°C for a preservation lasting from 1 to 14 days.

This is hard to obtain in Vietnam due to the absence of an adequate extraction technique in slaughter-houses. The pigs are generally bled by cutting along a median line in the neck and consequently the gland is damaged. We should devise a bleeding technique whereby the thyroid gland of the pig can be extracted intact.

In order to locate the gland, one gives the pig an oral dose of radioactive iodine the radio-activity of which is determined. Meanwhile the thyroidian tissue is microscopically controlled by histological cuttings and by the auto-radiographic technique.

Chemical composition.

According to classical authors, the thyroidian tissue contains 20% of lipid, 50-60% of water, a quantity of metalloid iodine and other important components such as :

— thyreoglobulin, with atomic mass of 650,000 — 700,000 which contains from 0.5 to 10% of iodine and is decomposed by hydrolysis into thyronine (3-5 tetraiodo-thyronine or thyronine);

— tri-iodothyronine, similar to thyronine, which some authors consider to be a true thyroidian hormone ;

— tyrosine and 3-5 di-iodotyrosine which still exist in a small quantity.

Process of production

Preparation is made in three stages:

– elimination of water by desiccation in vacuum dryer;

– elimination of fatty substances by an appropriate solvent;

– elimination of metalloid iodine.

The product obtained has the following components:

– fat	≤ %
– moisture	8.5 %
– ash	5 %
– organic iodine	0.18 – 0.22 %
– no metalloid iodine	

and is presented in the form of sugar-coated pills of 0.1 gr each.

The results of treatment are assessed after three periods of application of the above-mentioned preparation.

– *first time*: continued administration in three months of powdered pig thyroid at average dose of 0.05 – 0.10 gram.

Results of treatment

Total	72	100 %
– Complete disappearance of goitre	5	6.9
– Reduction of volume	10	13.8
– Unchanged	56	77.9
– Increase of volume	1	1.4

The observation of the general state and of the pulse and temperature of the patients reveals no serious complications.

Second time: Continued administration in three months of the pig thyroid preparation in sugar-coated pills of 0.1gr each, at daily dose of 0.50 – 0.10gr:

Results of treatment

Total	50	100%
– Total disappearance of goitre	6	11.5
– Goitre nearly disappearing or showing a reduced volume	12	24.5
– Unchanged	30	60
– Goitre increased in volume	2	4

Third time: Continued administration in six months with sugar-coated pills at daily dose of 0.05 – 0.1 gr:

Results of treatment

Total	32	100%
Complete disappearance of goitre	8	25
Reduction of volume	10	31.2
Unchanged	9	28.2
Increase of volume	5	15.6

The water of deep wells is very hard, that of funnel-shaped wells and ponds is less so.

Factors influencing the pathogenesis of delta goitre
Hardness of water
(German degree)

Degree \ Sources	Pond	Funnel-shaped well	Deep well
Normal 4 – 8°	0/20	0/20	0/20
Moderately hard : 12°	2/20	1/20	0/20
Relatively hard : 12 – 18°	1/20	1/20	2/20
Very hard : 18°	1/20	0/20	13/20
	13°1	12°1	23°1

Pollution of water

Examination Indices \ Hamlet	NH_4 mg/litre	NO_2 mg/litre	Organic matters mg/lit	Hardness of water (German deg.)
– Thap, Khuc	0.66	0.66	5.86	23.7
– Dai	0,87	1.75	7.6	22.3
– Dao	1.68	0.27	8.00	20.9
– Ben	1.12	0.50	8.90	29.8

Iodine content

Water of ponds, funnel-shaped wells, and deep wells: 5.3-1mg/litre.

Utilization of insecticides

Production brigades of agricultural cooperatives have made frequent use of DDT (a chloric compound) and organic phosphatic compounds (Diphterex, Wolfatox) for several years in the absence of all regulations regarding utilization and storage of these substances.

Discussion

Goitre at Phung Cong is delta goitre. By comparing it with that found in other communes in the delta and mountain regions, we obtain these results:

Commune	Province	Percentage of goitrous persons
– Da Trach	Hai Hung	40
– Chau Giang	–	18
– Cao Duong	Ha Son Binh	19.6
– Trang Thien		8.9
– Lien Nghia	Hai Hung	10
– Long Hung	–	10
– Phung Cong	–	10

Goitre incidence at Phung Cong is thus visibly lower than in mountain regions but about equal to that found in other communes in the delta, excep Chau Giang, Cao Duong and particularly Da Trach.

Locality	Percentage of goitrous persons
– Hoa Binh	22.3
– Cao Bang	40.9
– Tuyen Quang	48.8
– Yen Bai	40.8
– Average of provinces of mountain regions	43.2
– Phung Cong	10

Thus we can consider that goitre at Phung Cong and other communes in the delta is an *endemic goitre* for it affects more than 10/% of the population. We propose to designate it as "endemic goitre" to differentiate it from "upland goitre".

Besides, the volumes of goitre also differ:

Degree	Ha Giang (%) (Mountain region)	Phung Cong(%)
First degree	51.06	64.5
Second degree	37.93	17.7
Third degree	10.99	0
Nodular goitre	9.92	15.4
Mixed goitre	16.82	2.4

Thus the proportion of first-degree goitre and nodular goitre was higher at Phung Cong while third-degree goitre was non-existent.

Goitre found at Phung Cong was *goitre with enthyroidy*, not absorbing iodine. First and second-degree goitres were relatively frequent while that of the third degree was rare or non-existent. Recent studies on endemic goitre in Vietnam and other countries have led to the general opinion that this disease is iodine-hungry, this being shown in the high degree of thyroidian accumulation of iodine 1-131 as late as the 6th hour and still present after 24 hours. The concentration of iodine at Phung Cong remains at normal levels (after 2 hours: $9.8 \pm 5\%$; after 24 hours: $25.6 \pm 10\%$).

As the cause is not the absence of iodine, the treatment by iodine preparations is not efficacious for the majority of patients; on the contrary, for goitrous persons in mountain regions, the therapy is prophylaxis with iodine preparations (iodization of foodas recommended by the Institute of Hygiene and Epidemiology), iodosoya tablets (College of Pharmacy of Hanoi), Lagol solution, Iotamine tablets.

Surgical treatment does not play an important role, the goitres being generally small, without signs of compression; but in mountain regions, the proportion of goitres of the third degree is more considerable, and the disease requires surgical intervention.

We have recommended the use of thyroidian preparations containing organic iodine (products of the Pharmaceutical Factory No.1 in Hanoi) for the treatment of goitre with enthyroidy not showing iodine avidity, and this method has yielded good results at Phung Cong. These preparations have also been used for the treatment of simple goitres at the

clinic of nuclear medicine of Bach Mai hospital with notable results.

Result of treatment (clinical observations)	Bach Mai hospital (nuclear medicine clinic) (%)	Treatment at Phung Cong (%)		
		1st period	2nd period	3rd period
— Disappearance of goitre	6.4	6.9	11.5	25
— Reduction of volume	38.3	13.8	24.5	31.5
— Unchanged	50.1	77	60	28
— Increase of volume	2.6	1.38	4	15.6
— Light complications	2.6	0	0	0

After six months oi treatment, the rate of disappearance of goitre at Phung Cong was higher than at Bach Mai, probably because the patients in that commune were more homogeneous from the pathological point of view.

On the prophylactic plane, we must take into account other factors: growing pollution and greater hardness of water, widespread utilization of insecticides in the countryside. According to Minjinskata, there exists an obvious correlation between the iodine content of water and the incidence of goitre: the lower the content, the greater the incidence.

Relations between the iodine content and hardness of water and incidence of goitre (according to the Institute of Hygiene and Epidemiology)

Research unit	Place of research	Iodine (mg/litre)	Hardness (German deg).	Incidence of goitre
Institute of Hygiene and Epidemiology	Mountain region	0.19±0.04	8.42±2.23	60±14
	Upland	0.84±0.23	1.48±0.37	0
	Delta	5.32±1.08	10.42±2.5	0
Dao Ngoc Phuong and collaborators	Phung Cong	5.2 — 5.3	23.4 (deep well water)	10

It is clear that the incidence of goitre at Phung Cong, though lower than that found in mountain regions, is still higher than in some communes in the delta, Phung Cong being a region of endemic goitre. But unlike the mountain regions where the iodine content of water is low while the calcium content is high, the iodine content of water at Phung Cong is normal whereas the water is twice as hard. Can it be that harder water is influencing the etiology of goitre? Besides, water in the delta is relatively more polluted than in mountain regions, with a higher content of organic matters and nitrogenous derivatives.

Nevertheless we must not overlook another factor in the environment, viz. the widespread utilization

of insecticides in the countryside. Can it be that the components of these chemicals will influence the synthesis of thyroidian hormone, leading to the appearance of goitre? This problem remains to be solved.

Conclusion

Besides the endemic goitre of mountain regions which frequently occurs in our country, the main cause of which is the deficiency in iodine, we must take into consideration the endemic goitre in some regions in the delta, which is enthyroidy without iodine deficiency, like the cases in Phung Cong.

Since the delta goitre is not caused by lack of iodine and the treatment by iodine is therefore not efficacious, dried thyroidian preparations have been successfully used. They can be used in the treatment of hypothyroidies and various forms of goitre: simple, nodular goitre, pubertarian goitre, simple goitre of pregnant women.

From the prophylactic viewpoint, we must take into consideration the hardness and growing pollution of water and utilization of insecticides.

Evaluation of the effects and influence of intra-uterine devices (I.U.D.s)

DUONG TU KY
MA THI HUAN

This work is aimed at assessing the possible effects and influence of these contraceptive devices which have been used at Phung Cong for over ten years and their value in the conditions of a developing country.

Object of study and method

The study was made on 178 out of 420 I.U.D.-bearing women in the various production brigades, or 42.38% of the total. The other women did not come for examination as they felt fit and were satisfied with that method of birth control, which did not hamper them in their daily work.

The gynaecologic examination was carried out by specialists in gynaecology and obstetrics (the authors of this report) in the village itself, basing themselves on the health record of each woman and the I.U.D. record book, on clinical examination (interrogation according to a model questionaire) and on physical examination by means of special instruments associated with para-clinical techniques:

— Bacteriological and histological vaginal examination (direct examination or examination with coloration on plate).

– Cervicoscopy in case of signs of inflammation of the cervix (42 cases) and biopsy of the cervix in case of doubt (2 cases).

– Radiography of I.U.D. (34 cases) with a mobile radiologic apparatus, in case of evident functional and organic disorder.

The evaluation of lesions was entirely based on classical norms largely applied in gynaecology and obstetrics.

Results

I.U.D. - using time and age groups

Time / Age	From 1 to 5 years	From 6 to 10 years	Above 10 years	Total
30 years and less	22	—	—	22
31 – 35 years	25	2	—	27
36 – 40 years	41	7	1	49
41 – 45 years	27	9	—	36
46 years and more	26	14	4	44
Total	141	32	5	179

Thus 75.3% (134/178) of the women wearing a I.U.D. were of child-bearing age (less than 45 years), and 55% (98/178) still had great possibilities of becoming pregnant (less than 40 years). This fact explains the visible effect of I.U.D.s on the growth of the population. The percentage of women bearing

I.U.D.s for 6–10 years was 17.4% (32/178), for over 10 years, 2.8% (5/178). The longest time was 12 years, and the total number of months was 7,416.

Haemorrhage was a symptom frequently met after the insertion of I.U.D.s (20.78%); this rate being higher for the age group above 35 years; however, in most cases, it was momentary and did not notably affect working capacity.

Headache was an entirely subjective sign, showing no relations with such organic lesions as arterial hypertension, sinusitis .., and occurred suddenly without any specific relation with the I.U.D. Vu Dinh Hai and his collaborators (see *Y hoc thuc hanh*, Medical Practice, No 157, p. 20) in a systematic examination of 441 female workers in Haiphong port, obtained a rate of 34% (150 women) for women who suffered from headache; however, he could not detect any organic lesion relating to it. If all the 420 I.U.D.-using women in the village were taken into account (about 58% of whom did not come for examination because they did not have to complain about any pathological symptom), the headache rate was only 23% (99/420).

It was the same with *abdominal pains*: if we compare the number of women having this symptom with the total (50/420), the real rate was only 11.9%; this perhaps included women having a gastritis or a gastroduodenal ulcer, or about 2.8% (35 out of the 1237 who had been subjected to internal-medicine examinations).

The symptoms of so-called *sexual troubles* were insignificant. The percentage of organic troubles was generally low.

Functional disorders according to age groups

Age	Number	Haemorrhage		Headache		Abdominal complaint		Sexual troubles	
		Number of cases	Rate (%)	Number of cases	Rate (%)	Number of cases	Rate (%)	Number of cases	Rate (%)
Less than 30 years	22	6	26.3	12	54.5	8	36.3	1	4.5
30 – 35 years	27	7	25.8	17	62.9	6	22.2	1	3.9
36 – 40 years	49	8	16.3	25	51	18	36.6	4	8.1
41 – 45 years	36	7	19.4	23	63.8	12	33.3	2	5.5
46 years and more	44	9	20.4	22	50	6	13.6	0	0
Total	178	37	20.4	99	55.4	50	28.6	8	4.4

Frequency of organic lesions

	Number of cases	Rate (%)
– Number of women examined	178	–
– **Vaginitis**	12	6.74
– Ulcerous cervicitis	15	8.42
– Suspected malignant lesion of the cervix	2	1.12
– Polypus of the cervix	4	2.24
– I.U.D. come out	2	1.12
– Pregnancy	8	4.49
Pearl index	$\frac{8 \times 1,200}{7,410}$	= 1.29

It seems that such troubles as vaginitis, cervicitis haemorrhage, abdominal complaints were more linked to the I.U.D.s of the Sap and Lipper types than to those of the Dans type.

Discussion

I.U.D.-bearing women are of child-bearing age. The effect of the insertion of I.U.D.s is visible in that it helps to lower the growth rate of the population.

The most frequently used type is the Dans I.U.D., a celluloid ring. The technique for using it is simple but its contraceptive effect is inferior to that of other types.

Functional and organic troubles according to the type of I.U.D.

Type of I.U.D	Total number	Headache		Abdominal complaint		Vaginitis cervicitis		Haemorrhage		Slip of I.U.D.		Pregnancy	
		case	%	case	%	case	%	case	%	case	%	case	%
Celluloid													
Dans	149	80	53.7	40	28.6	17	11.4	31	20.8	2	1.3	7	4.7
Sap-Lipper	24	15	62.5	10	41.6	9	37.5	6	25	—	—	1	4.1
Ota	5	4	—	—	—	1	—	—	—	—	—	—	—
Total	178	99	55.4	56	28.6	27	15.1	37	20.8	2	1.1	8	4.5

The functional troubles (headache, abdominal pains...) are entirely subjective signs, very difficult to evaluate, and having no specific characters; they can relate to many other factors besides the presence of an intra-uterine device.

Haemorrhages are functional troubles, frequently appearing in the form of prolonged menses (more than 7 days and more abundant than usual), a shorter menstrual cycle, or abnormal haemorrhages. If one takes into account only the women examined (178), the rate was relatively high (20.78%) compared with that obtained by other specialists—Vietnamese and foreign; nevertheless by including the other 242 I.U D.-using women who were not examined, this rate was only 8.8% (37/420). Of the women suffering from haemorrhage, 34 were radiographed, with the following results: in 4 cases the I.U.D. appeared as a spiral, a broken ring, or was about to slip out. The four women had their I.U.Ds taken out (three celluloid Dans and one metal Ota) and replaced by well-adjusted and well-placed celluloid Dans rings. After two months, they no longer complained of menstrual disorders.

— Were considered as suffering from inflammation of the genital tract, those cases who had fungi or bacteria in their vaginal mucus, or abundant leukorrhea, or an ulcerous inflammation of the vagina or cervix: this condition was observed in 27 women or 16.15% (27/178); this rate being not higher than that usually recorded in systematic examinations of normal women. Thus, the I.U.D. does not seem to increase the rate of inflammation of the genital tract.

— With regard to the contraceptive effect, of the 178 women examined, eight had had pregnancies

(4.49%). Counting those eight cases of pregnancy and the total number of months examined (7,416), the Pearl coefficient was as follows:

$$K = \frac{8 \times 1{,}200}{7{,}416} = 1.29$$

an acceptable coefficient in comparison with those given by other specialists.

Rate of failure in using I.U.D.s and Pearl coefficient (according to some specialists)

Specialists	Number of I.U.D.-using women	Number of months under observation	Rate of failure %	Pearl coefficient %
— Vu Nhat Thang (1963 — 64)	—	—	2.29	—
— Pham Gia Duc (1965)	147	1,561	9.5	10.76
— Mau Don (1971)	1,140	10,898	2.28	2.8
— Dao Loi (1979)	271	—	5.9	—
— A. Zipper and D. Sanhueze (Santrago)	—	—	1.6	4.5
— Duong Tu Ky (1979)	178	7,416	4.49	1.29

One may thus understand why I.U.D.s have become the principal method of reducing the birth rate in the developing countries. In four Asian countries

(Taiwan, South Korea, India and Pakistan) there were 71 million I.U.D.-using women in 1972.

The rarely observed complications (ectopic pregnancy, sinking of the I.U.D. into the muscular layer of the uterus or its penetration into the peritoneal cavity) were not observed among the 178 women examined, or more exactly among the 420 I.U.D.-using women in the village. It was the same with *cancerous lesions*: among the 42 women with obvious functional troubles who were examined with the cervicoscope, there were two suspects who underwent biopsy, but the histological results were quite normal.

I.U.D.s have not been blamed for any serious trouble or complication from the psychological point of view.

The insertion of an I.U.D. is not a complicated operation; it can be done on a large scale in the countryside without requiring any high-level technical conditions.

The experiments conducted at Phung Cong are valid for all rural areas: establishment of a health-care network, associated with a mass movement for birth control to lower the rate of demographic growth.

Reduction of population growth rate

DANG PHUONG KIET
NGUYEN DUC HINH

One of the main objectives of the medical service is to try to lower the growth rate of the population to an appropriate level in accordance with the economic and cultural development of the village, the amount of material wealth that the cooperative is able to supply, and the possibilities for health care.

Objective and method

The goal is to lower the birth rate, for the death rate in general and that of children in particular have been gradually dropping thanks to the efficient efforts of the health service, and the development of therapy and preventive hygiene for many years. As a state policy, family planning has been widely popularized in North Vietnam since 1965. This measure has never been opposed by local administrations but it has only been grudgingly accepted by most of the population. One of the main reasons is that family planning runs counter to long-standing customs and habits and beliefs prevalent for thousands of years among the peasants. "As heaven gives birth to elephants, it also grows grass to feed them," "A large population is better than a lush grassland", "It is better to have a single son than ten daughters" – such are some of the firmly-established ideas for generations of countryfolk. If the cadres, who frequently play the main roles in official organs and mass organizations, are not made

fully conscious of the long-and short-term, family and social, advantages of birth control and if this practice has not become a social need, its realization will meet with many obstacles in the countryside. The administrative measures and even the coercive economic measures which have been applied in some regions may at the outset yield some results, but they are not durable and may even lead to disastrous consequences.

All this explains why in the Vietnamese countryside as in other developing countries, demographic growth still assumes a natural character up to the present time.

Birth rate in North Vietnam from 1960 to 1968

Item	1960	1961	1962	1963	1964	1965	1966	1967	1968
Yearly number of births (ten thousand)	70	63.6	70.8	72.6	70	69.7	65	64.6	69.4
Birth rate (per thousand)	46	38	40.8	41.1	38.5	37.8	34	33	34.4
Growth of the population (per thousand)	34.1	30.1	33	34	32	31.1	26.8	25	26.8

Thus in nine years (from 1960 to 1968) the total number of newborn babies in the whole of North Vietnam was about 6,150,000, or an yearly increase of 680,000, equivalent to the population of a province

Up to 1975-1980, the yearly increase of the population was 26 per thousand, a very high rate compared with other regions of the world, except Africa.

After national reunification there are for the whole of Vietnam 5,000 new-born babies every day, the equivalent of the population of a village, 150,000 a month and 1,800,000 a year, equivalent to the population of a large province (the average size of provinces has grown since 1976 due to mergers).

Annual growth rate of world population from 1975 to 1980 (%)

	Population (in million)		Population growth (in million)	Yearly growth (%)
	1975	1980	1975 – 80	1975-80
– The whole world	4,032	4,414	382	1.8
– Developed countries	1,137	1,180	43	0.7
– Developing countries	2,895	3,234	339	2.2
– Africa	405	468	63	2.9
– Asia	2,278	2,512	234	2.6
– Europe	769	795	26	0.7
– South America	216	245	29	2.5
– North America	243	270	27	1.5
– Oceania	21	23	2	1.4
– Vietnam	48	53	5	2.6

Phung Cong shows all the characteristics of the traditional mode of life of rural society. Though the

movement for family planning was launched in 1966-67, by 1972, in all the villages only 18 women had accepted to use I.U.D.s. The many ensuing enonomic, cultural, social and medical hindrances made the Party, administration, and medical service in Phung Cong conscious of the necessity of family planning.

A committee to encourage family planning was set up, composed of the president of the village administrative committee, the head of the public health committee, the president of the women's association, and the responsible cadres of various branches and organizations. It was the Party organization which began the study of family planning, its significance and objective, with the assistance of those of its members who had recognized its importance and who made up 60% of the membership. The number of women accepting to use I.U.D.s. went up from 18 in 1972 to 40 in 1973, then 88 in 1974.

Forty per cent of the Party members were refractory because they (mostly the husbands) wanted to have many children. Some of them thought that the administration wanted to curb pregnancies owing to the need for manpower ; others that the use of I.U.D.s. was an obstacle to sexual intercourse. Young husbands who had joined up or were working in places far from their village were afraid that their wives might commit adultery if they had an I.U.D. on. Thirty per cent of the women refused to use I.U.D.s fearing harm to their health. Five grass widows having already two children each were not willing to have I.U.D.s inserted, anticipating

suspicion from their husbands. Others wanted to have at least three children before checking their ability to become pregnant.

Those prejudices and attitudes hampered the mass movement for family planning. These obstacles could be removed only through persevering and convincing explanations and many-sided encouragement.

Elaborate and painstaking work had to be carried out if one was to reduce notably the birth rate among the population. The family planning committee members visited separately each household to discuss matters, first with the husband, then with the wife, then with both of them. They tried to win over the old people who ordinarily were prejudiced and conservative and wielded great influence in the families. Then each couple received a printed form to fill out: this meant its acceptance of one of the family-planning methods. Finally the rural administrative committee took an important measure of economic encouragement : any woman who agreed to use an intra-uterine device would receive an allowance of 15kg of paddy, have 10 days of rest, and be exempted for one year from public-interest work : maintenance of dykes and irrigation canals etc (30 workdays, or 45 kilograms of paddy to be contributed to the cooperative).

Thus for the couples having accepted birth control, intra-uterine devices were almost the only contraceptive method. Condoms, coitus interruptus, contraceptive drugs, etc. usually employed in economically-developed countries or in the cities, are not easily accepted by the Vietnamese peasants. Abortion

From 1975 onward, the number of women wearing an I.U.D. has increased and the birth rate has fallen sensibly.

Year	Number of inhabitants	Methods to lower birthrate						Number of newborn babies	Growth rate of population (%)
		Intra-uterine devices				Provoked abortions	Tying of Fallopian tubes		
		I.U.D. wearing women	Percentage of population	without effect	Suppression of I.U.D				
1972	3 717	18	0.32	—	—	—	—	49	2.06
1973	3,804	40	1.05	—	—	—	—	105	2.31
1974	3,907	88	2.25	—	—	2	—	125	2.47
1945	3,996	207	5.18	2	—	5	—	101	2.23
1976	4,084	308	7.39	4	—	6	—	74	1.25
1977	4,134	388	9.38	5	—	7	—	72	1.23
1978	4,184	421	10.06	12	1	6	1	79	1.17
1979	4.231	452	10.58	9	4	8	1	83	1.17

is not a contraceptive method but one of birth restriction which is at present used largely by townswomen, as in Hanoi and Ho Chi Minh city where the number of abortive uterine curettages is equal to that of births, equivalent to 2% of the population. In the countryside this method is rarely resorted to : in eight years, at Phung Cong there were recorded only 34 cases compared with the 452 I.U.D. – using women, or 0.07% This is due to conditions of organization and technique in the countryside but perhaps also to religious reasons.

The birth rate fell from 2.73% in 1975 to 1.25% in 1976, the year in which the number of I.U.D. - bearing women leapt forward, reaching 308. This rate is found only in a very small number of villages, not only in the North but also in the whole country. It is inferior to the growth rate of the world population in general (1.8%), to those recorded in North America (1.5%), in Oceania (1.4%) and of course in the developing countries (2.2%) It is to be noted that this very low birth rate has been maintained and has continued to drop.

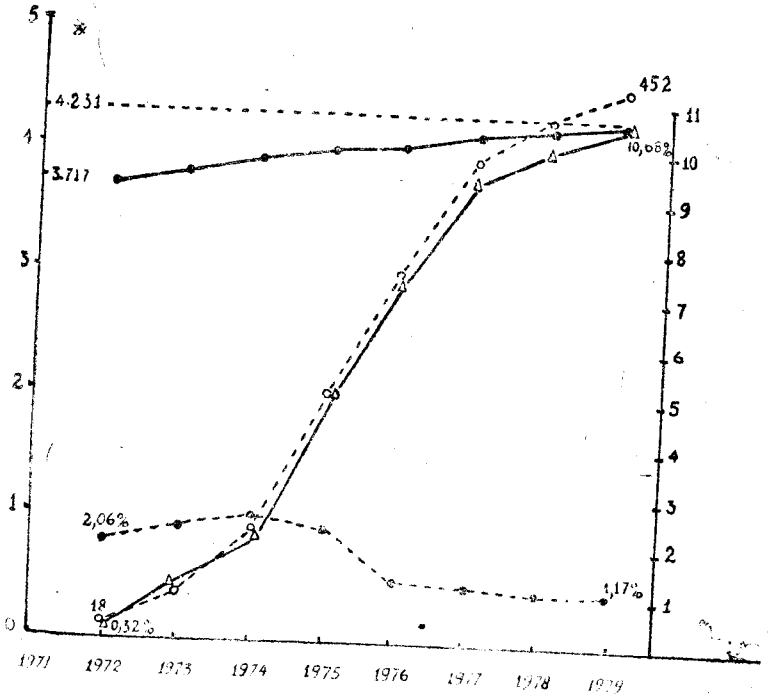
Economic and cultural development

Phung Cong has all the characteristic features of a village in the North Vietnam delta in which the economic life entirely depends on agriculture.

Though great changes have come about in farming technique and organization of agriculture (setting up of cooperatives, building of irrigation networks, partial mechanization of farming work, introduction of high-yield strains) agricultural production is not yet stable and crop yields have increased but slowly because of yearly natural calamities, the low managerial level, and the serious sequels of the war. In

these conditions the living standard of the peasant cannot be raised and may even drop, a result of the imbalance between the growth of the population and that of social production.

Synthetic curve of population growth rate and rate of I.U.D. - wearing women.



. – . population
o ... oNumber of I.U.D. - wearing women
o. . . . . o Demographic growth rate
Δ . . . . Δ Rate of I.U.D. – wearing women compared with the population

Phung Cong has freed itself from this threat thanks to intensive reduction of demographic growth through birth control.

Total farming area tends to shrink. It has been reduced by 23 *mau* (one *mau* equals 3,600 square metres) in ten years, dropping from 931.7 to 608.5 *mau* or 2.3%. This reduction is current and normal in the North Vietnam delta. For instance, in Nam Hong village (near Hanoi) in nine years (1960-68) the total crop acreage decreased by 166 hectares (from 1,259 to 1,093 hectares). This reduction is due to the construction of dwellings and public-interest works to meet the growing needs of the population. The result is that at Phung Cong the planting area per head of population shrank from 2.7 *sao* in 1970 to 2.1 *sao* in 1979 (one *sao* equals 360 square metres). However this reduction has slowed down since 1976 when I. U.D.s began to be used on a large scale, thus making it possible to reduce demographic growth by 6.4 points between 1976 and 1979, against an increase of 7 points between 1972 and 1975.

The total production of rice, the staple food, and the average yield per hectare have shown no sign of an increase in this decade. In 1974 we recorded a relatively high yield of 4.9 tons of paddy per hectare owing to favourable weather conditions, but then an immediate drop in 1975 to 3.753 tons per hectare, and again in 1978 because of the heavy typhoons which devastated the Red river delta. The annual rice ration per capita decreased from 188 kg in 1970 to 120kg in 1978; however this drop was compensated for by a boost in the production of maize and other subsidiary crops grown on the fertile alluvial soil along

the banks of the Red river. The annual consumption of maize per head of population rose from 1 kg in 1970 to 30kg in 1979, that of potato also went up. Thus there has been a gradual change in the diet.

With regard to pork and fish, the main sources of animal protein, per capita consumption remained unchanged during the period of natural growth of the population (1970-75) but with the reduction of the growth rate (1976-79), it increased three times for pork and about twice for fish.

Per capita annual production (kg)	1970	1975	1976	1979
– Pork	1	1	1.2	3
– Fish	1.5	1.5	1.5	2.5

We must also take into account the incomes derived from cottage industry, whose yearly average per inhabitant rose from *9 dong* in 1976 to 30 *dong* in 1979, as against 5.5 *dong* and 8 *dong* for 1970 and 1975 respectively.

Thus for the Phung Cong peasants, the decrease in demographic growth and its maintenance at a low rate are a very important condition and a favourable factor for stabilizing production and improving the economic life.

The cultural standard also tends to rise.

Year	Number of inhabitants	Number of children enrolled in creche	Number of children enrolled in infant school	Number of children in first-level school	Number of pupils in second-level school	From creche to second-level school		Number of pupils in third level school	Number of students in university and technical school
						Number of children	% compared with population		
1970	—	97	11	558	400	1,066	—	87	2
1971	—	108	14	496	383	1.001	—	83	3
1972	3,727	141	11	5 5	414	1 091	28.1	76	2
1973	3,804	136	18	486	359	999	26.3	73	1
1974	3,901	148	40	473	350	1,011	25.8	71	3
1975	3.996	155	120	596	410	1.281	32	67	5
1976	4.084	130	177	515	496	1.318	32 2	71	4
1977	4,134	156	186	488	453	1.253	31	70	2
1978	4.184	141	280	433	418	1,272	30.4	61	5
1979	4,2.1	134	293	519	439	1.385	32.5	61	6

Thus education has expanded further in the last ten years. Particularly the number of children enrolled in infant-schools has increased sensibly since 1975.

***

In ten years of hard and persevering effort, conducting patient explanation among the population in order to gradually overcome the obstacles created by customs and beliefs, Phung Cong has succeeded in lowering the growth rate of its population. Now the checking of the birth rate has become an urgent need for the villagers who are conscious that "in the conditions of an under-developed economy, to reduce the birth rate is a capital measure to break the vicious circle of poverty, malnutrition, heavy mortality, excessive natality, and economic dependence."

The contraceptive effect of intra-uterine devices has been tested over many years: they have not caused any accidents and have shown no harmful influence on the psychology, physiology and pathology of the women, and have been accepted by many couples. The use of intra-uterine devices can be considered as the most appropriate method, particularly in the present rural conditions of developing countries. Nevertheless more explanatory work should be done and organization and technique must be perfected in order to attain greater efficiency.

Socio-èconomic conditions and infantile morbidity

DANG PHUONG KIET, LE NGOC NHUAN, PHAM THANH TRUOC, NGUYEN DUC HINH, DO VAN NHIEM,

Within the framework of a "Survey of children's health", an investigation was made from June 5 to 20, 1979, on the economic and cultural factors, the conditions in housing, nutrition, hygiene, and the habits in childbirth (pregnancy and delivery) and nursing, simultaneously with a survey of infantile morbidity (from the foetal period to 15 years). The investigators are clinical pediatrists, paraclinical physicians, and 27 students in the 6th year of medical college and specialized in pediatrics.

Objective and method

Before the investigation, various measures were applied: a conference was held by leaders of the local Party organization, the administration, and agricultural cooperatives, the heads of production brigades, responsible cadres of various mass organizations and hygiene activists in the village, to discuss the content, goal and method of investigation and hear the explanations given to the inhabitants by Party cell secretaries and production brigade heads.

– Four types of printed questionnaires were distributed regarding a. *The standard of living, habits of hygiene and children's diseases in each household* b. *Pregnancies;* c. *Habits in infant nursing*; d. *State of the crèches.*

Three methods of investigation were simultaneously employed: observation and measurements combined with face-to-face interviews and clinical and paraclinical examinations (haematology, bacteriology, and on-the-spot radioscopy).

In each filled-out questionnaire were noted the observations and proposals of the people concerned and the investigators.

The figures and documents were analysed and compared together according to the method of mathematical statistics (significant level P calculated according to Fisher and Pearson tests) on the basis of classification of living standards into fairly *high* (A); *medium* (B); *bad* (C);

Results of investigation

Fundamental characteristics of Phung Cong (figures given by the communal authorities):

Total area: 10 square kilometres (2.5 km by 4 km) bordered by Xuan Quang commune in the north, Van Phuc commune in the south, Cuc Cao commune in the east and Van Duc commune in the west: it is divided into four hamlets grouped into one agricultural cooperative composed of nine production brigades.

Total population: 4,012, including 2,230 children (55.6%) below 15; number of inhabitants per household: 4.7; demographic growth rate: 1.25% (birth rate 1.85%; death-rate: 0.6%).

Cultivable area: 912 *mau* (328.3 hectares or 32.8% of total area); average per inhabitant: 2.4 *sao* (804 sq.m.);

Total production: *paddy*: 1,932 metric tons *s* average yield 4.5 tons per hectare; net share of each inhabitant: 155 kg per year, or 1·.9 kg per month. Share of cooperative members: 73% of total production.

Maize: 124 metric tons; average per inhabitant 30 kg/year;

Pork per inhabitant: 1.2 kg/year; individual ration: 0.5 kg per year; *Fish*: average per head of population: 1.3 kg per year.

Income per inhabitant derived from non-agricultural occupations: 13 *dong* per year.

Households having a brick house: 60% (figure obtained during the investigation).

Public Health

Medicine: 4 doctors and assistant-doctors
Traditional medicine: 4 practitioners
Midwives: 2
Trained nurses: 5
Nurses of production brigades: 14

Households having a toilet: 75%; households having a well conforming to required norms: 32%

Crèches: 4, tending 60% of children under 3.

The medical station was housed in two buildings comprising ten rooms (403 sq. metres) with consulting room, separate wards for men, women, and children, pre-natal check-up room, delivery room, gynaecological room, birth-control room. Number of beds: 10.

Production of traditional medicines: 500 kg (value: 2,500 *dong*,); average per inhabitant: 0.155 kg per year.

Hygiene conditions, Habits, Living standards

	A		B		C		Total	
	House-holds	Rate %	House-holds	Rate %	House-holds	Rate %	House-holds	Rate %
— Double septic tank								
none	29	19.3	74	24.4	32	29.6	135	24.1
type A	75	50	88	29.13	26	24.1	189	33 75
type B	28	18.7	99	32.78	24	22 2	151	26.96
type C	18	12	41	13.57	26	24.1	85	15.17
— Curbed well none	90	60.7	202	66.8	90	83.4	382	68.12
type A	43	28 6	47	15.56	8	7.4	98	17.5
type C	4	2.7	10	3.31	6	5.55	20	3.57
— Flies in the house								
none	101	64.8	135	45	42	38.9	278	46 6
few	29	19.3	165	55	64	59.3	258	46
many	36	13.3	2	0.6	2	1.8	24	4.28
— Soap per head: month (gr)	155±	84	—	—	113±	60	—	—
— Separate beds for children	5	3.3	11	3.7	5	4.6	21	3.7

1	2	3	4	5	6	7	8	9
— Pe sonal towel	72	48	137	45.4	35	32.4	244	43
— Bottle of boiled water for children	108	72	158	52.6	61	56.4	322	58.4
— Washing of hands before meal	51	34	120	40	15	13.8	186	53
— Clean nails	60	40	111	37	19	17.6	190	33.5
— Childbirths : number of deliveries	5.17±	2.58	5	2.64	5.7±	2.7	—	—
number of living children	4.24±	2.08	4.15±	1.99	4.7 ±	2.2	—	—
— Wearing of I.U.D.s	53	33.3	97	32.3	35	32.4	185	33.1
— Consultation of sorcerers and manes of ancetors in case of illness in the family								
Before 1954	2	—	1	—	—	—	3	—
At present	1	—	2	—	—	—	3	—

Housing and nutrition conditions — Cultural level and living standards

	Fairly high (A) 149 households		Medium (B) 302 households		Bad (C) 108 households		Total 559 households	
	Number of household	Rate %	Number of households	Rate %	Number of households	Rate %	Number of households	Rate %
Housing conditions								
Brick house	120	80	187	62.3	17	43.5	354	63.2
Living space (sq. m. per inhabitant)	4.86±	2.66	6.83±	2.36	5.7 ±	2.7	—	—
Nutrition conditions	15.58 ±	3.8	13.6 ±	2.92	10.7±	4.19	—	—
Rice per head/month (kg)								
Diet								
rice and vegetables (boiled)	104	69.4	256	84.7	104	96.2	464	82.65
rice and vegetables cooked with fat	25	16.6	28	9.2	4	3.8	57	10.38
rice, vegetables, meat or fish	21	14	18	6	—	—	39	6.96
meat consumed on festive days (kg/year)	10.8±	8.4	12.6	—	7.06±	7.2	—	—

	2	3	4	5	6	7	8	9
Evaluation of living standards (by investigators)								
— sufficient	96	66 2	66	24.2	—	—	162	30.5
— insufficient	40	27.5	183	63.2	50	47.6	273	51.4
— very insufficient	9	6.3	42	12.7	55	52 4	961	18.1
Cultural level of mothers								
Literacy class	—	—	8	2.6	—	—	8	1.45
Ist level education	67	44.6	160	52 9	60	54	287	51.25
2nd — —	42	28	80	26'4	10	9	132	23.57
3rd — —	6	4	2	0.6	—	—	8	1.45

Morbidity and living standards

The determination of a disease was based mainly on clinical examination. the norms of diagnosis being the classical ones The diseases to be detected were the most current, excluding specialities. The number of children examined was 1659 or 79.30% of total, classed according to the living standards of families : A : 448 ; B : 875 ; C : 336.

	A 448		B 875		C 336		Total 1,650	
	cases	%	cases%	%	cases	%	cases	%
Malnutrition (achrepsy 3T)	8	6.2	26	13	9	17.2	43	11.3
Rachitis (3T)	—	—	25	12.5	14	26.4	39	10.3
Diarrhoea	2	0.4	22	2.5	14	4.1	38	2.3
Disentery syndrome	14	3.1	8	0.9	6	1.7	28	4.6
Ascaridiosis	44	9.8	270	30.8	52	15.4	366	22
Hepatitis	1	0.2	—		6	1.7	7	0.4
Trachoma	33	7.4	107	12.2	72	21.4	212	12 7
Keratitis	7	1.8	14	1.6	21	6.2	42	2.5
Scabies	14	1 5	41	4.6	15	4.4	70	4.2
Measles	8	1.7	68	7.7	31	9.2	107	6.4
Cough	1	0.2	7	0.8	5	1.5	13	0.7
Asthma	10	2	36	4.1	20	5.9	66	4
Rhinitis	—		17	2	5	1.5	22	1.3
Otorrhea	29	6.4	53	6	22	6.5	101	6.2
Rhumatism with or without cardiac manifestations	5	2	13	2.8	4	1.8	22	2.3

Living standard (economic and cultural conditions):

Number of households investigated: 559, or 65.8% of total (559/843). Housing and nutrition conditions and cultural level corresponding to living standards: fairly high (A): 149; medium (B): 302; bad (C): 108.

Among the diseases due to conditions of nutrition: apart from two diseases: malnutrition and rachitis, we detected ferriferous anaemia with a haemoglobin rate below 10gm/100 ml in children under 3: 36/100 children (22.5%).

Other diseases rarely observed and without relation to living conditions: sequels of encephalic affections: 5 cases; sequels of poliomyelitis: 2 cases; epilepsy: 1 case; Langdon Down sequels: 1 case; congenital deafness: 1 case.

The manifestations of psychological development and psychic troubles were more or less related to the living conditions:

	A	B	C	Total
Fairly good pupils less than 7 years old	4	—	—	4
Bad pupils less than 7 years old	—	—	—	—
Psychic retardation		14	8	22
Nycturia	5	2	5	12
Nocturnal anguish	—	6	11	17
Noctambulism	—	2	—	2
Dysarthry	—	2	—	2

The relations between the conditions of nutrition, hygiene, housing and state of diseases are illustrated by the following cases:

Family of Mr P.V.T. (Production bridage 1): latrine located one metre from the house, infested with flies, dirty funnel-shaped well with edge of beaten earth (Type C), only one towel for the whole family, 4 children (15, 12, 10 and 7 years), all having dirty nails and affected by trachoma and ascaridiosis; one is rachitic, one anaemic and one having otomastoiditis (already operated on).

Family of Mrs D.T.H. (production brigade 9): no hygienic latrine, no well, all her 4 children (13, 11, 9 and 7 years) having dirty nails and affected by trachoma.

Family of Mr D V N. (production brigade 9): no well, latrine of type C, only one towel for the whole family; all the children (13, 12, 11, 8; 6 and 2 years) are affected by trachoma; 2 by otorrhea.

Little Lien, 9, daughter of Mrs C.T.B. (production brigade 9), living standard of the family: low, no latrine, fecal matter evacuated into a pond, a single towel for all; Lien has dirty nails and is affected by trachoma and dysentery after bouts of whooping cough and measles.

Family of Mr D.V.T. (production brigade 2): low living standard (brick house, area: 2.2 sq. metre per head): only one towel for all the family, all 5 children (13, 10, 7, 4 years and 18 months) had had measles and suffered from malnutrition, otorrhea, dysentery and diarrhoea.

Pregnancy, childbirth, nutrition of infants.

The investigation made on 96 mothers (babies from newborn to 2 years old) gave the following results:

Before childbirth

Examination of pregnancies averaging 2.4 ± 1.47 times.

– Hard manual work up to childbirth : 37.4%
– Light manual work up to childbirth : 25.2%
– Prenatal rest :

No rest	: 67.5%
Fortnight's rest	: 3.8%
One month's rest	: 11.6%
Two months' rest	: 5.26%
Three months' rest	: 11.6%

Childbirth

At medical station : 99 cases

At home : 1 case : Mrs P.T.M. 25 years old. Prenatal check-up : only once ; could not go to maternity home in time : newborn baby asphyxiated for ten minutes.

– State of newborn child after birth :

Baby crying at once : 90.6%
Baby asphyxiated for three minutes : 2%
– – – five – : 4.32%
– – – ten – : 2.08%
Baby dies from asphyxia : 1%

– Time spent at medical post : 3.6 ± 2 days

Nutrition of sucklings

– Not fed by mother : 17%

– Insufficient or no maternal milk : 19.7% (due to insufficiency of food : 8 cases; to injection of antibiotics : 3 cases ; to working conditions : 3 cases, and to diseases : 2 cases).

– Feeding infants from mouth to mouth : 10.4%
With unclean rice gruel : 8.3%
For a limited period (during diarrhoea) : 4.1%

Insufficient nutrition : 11.3% (in group C : 17.2%)

– Rachitis : 10.3% (in group C . 26.4%)

– Anaemic infants : 22.5%

Proposals of investigated households

After the interview, each head of family was asked to make proposals for improvement of living conditions :

Proposals	A	B	C	Total
– Supply of building materials for the three sanitary facilities (toilet, well bathroom)	67	182	31	280
– Supply of soap	18	60	16	94
– Raising the living conditions	—	12	19	31
– Supply of sugar and milk for children	1	1	9	11
– Grant of land to build a house	1	10	—	11
– Increased medical check-ups and supply of medicines	3	7	—	10
– Food allowances	—	—	3	3
– Granting exemptions to families with sick members during repartition of work	1	—	4	3

Discussion

Representative character of Phung Cong in the economic field

The data (demographic density, crop area, yields of rice and maize, distribution of food, revenue derived from side occupations, medical facilities and personnel) which were supplied by the communal administration or obtained during the investigation, make it possible to affirm that Phung Cong belongs to the category of moderately well-off villages in North Vietnam.

Classification of living standards of each household.

This fundamental step allowed us to detect, evaluate and compare the "organic" relations between the environment and the diseases. This classification was given by the heads of production brigades who, thanks to their long experience, their knowledge of the activities of each family (occupation, traditions, revenues and expenses), their synthetic assessment, had determined it since long. The data collected in this investigation, after analysis and comparison (according to the methods of mathematical statistics) show that this primary classification was, in general, quite correct. The principal factors which create significant differences between the group having a fairly high living standard (A) and that having a low one (C) can be summarized as follows:

All those indices differ from each other and have a statistical significance (P: significant level calculated according to Fisher test or X^2 test)

	Fairly high (A)	bad (C)	P
Households having brick house	80%	43.5%	smaller than 0.001
Monthly consumption of rice per inhabitant (in kg)	15.58±3.87	10.74±4.19	0.001
Meals with rice and vegetables	69.4%	96.2%	0.001
Meals with rice and meat	14%	0	—
Meat consumed on festive days per household per year (in kg)	10.8±8.4	7.6±7.2	0.001
Sufficient material situation	66.2%	0	—
Very insufficient situation	6.3%	52.4%	0.001

Economic and cultural conditions and morbidity

Nutritional ailments are the most evident proofs of the economic origin of infantile morbidity: the malnutrition rate of the group with bad living conditions (17.2%) was nearly three times that of the fairly-high-level group (P smaller than 0.001). Rachitis did not exist in Group A (P smaller than 0.001) and appeared only in Group C (26.4%).

In relation to hygiene conditions and habits, the other diseases were under the direct influence of the living standard: diarrhoea is 10 times higher in Group C (4.1%) than in Group A (0.4%), trachoma, 3 times (respectively 21.4% and 7.4% – P smaller than 0.001); measles is also 5 times higher (respectively 1.2% and 1.7% – P smaller than 0.001).

However, there were also diseases in which such relations were not found, such as dysenteric syndrome, infected scabies, otorrhea, rheumatic affections — (P greater than 0.001). The manifestations of psychological development also obviously depended on the living standard: the fairly good pupils (over 7 years old) belonged only to Group A; on the contrary, bad pupils and those having a retarded psychological development were only in Group C (P smaller than 0.001).

It is probable that some precocious manifestations of psychologic troubles of little children were also affected by living standards: nycturia was 3 times higher in Group C (10%) than in Group A (3.3%); nocturnal anguish and noctambulism were seen only in Group B, not in Group A.

The rate of unwanted pregnancies was still high: 29.4%; the rate of pregnant women having to do heavy manual work was 37.4%; that of pregnant women enjoying no days of rest (that is, having had to work until childbed): 67.5%; that of anaemic pregnant women: 57%; that of nursing mothers not benefiting from any particular diet: 83%; that of mothers having no or not enough milk to breast-feed their children: 19.7%. There still existed many backward habits in the nutrition of children: feeding infants from mouth to mouth: 10.4%; giving the infants only salted rice gruel: 8.3%, or a restricted diet: 4.1%.

Thus serious consequences occurred: new-born babies asphyxiated to death at birth (1.04%); newborn babies momentarily asphyxiated (8.48%) and consequently perhaps affected by irrecuperable

mental defects; high rate of diseases due to malnutrition among children aged less than 3 years: ferriferous anaemia and lack of protein (22,5%), malnutrition (13.3%), rachitis (10.3%).

These phenomena were caused by many factors.

Very low living standards

Malnutrition during pregnancy and nursing was the direct cause leading to frequent anaemia among both mothers and infants, to insufficiency of maternal milk or its disappearance, and to malnultrition and rachitis of little children.

Social factors

The women did not receive work assignments suited to their health condition, a period of rest during pregnancy and the prenatal period; satisfactory priority in the supply of food during pregnancy and nursing period (the proposal of mothers to increase the quota of sugar and milk to their infants was thus justified). The inadequate sanitary facilities (well, toilet) made it impossible to stamp out such diseases as trachoma, infectious diseases and those of the digestive tract, etc.

Superstitions (consultation of sorcerers, genii manes of ancestors in the event of illness), though not frequent were yet to be wiped out.

Consanguineous marriages were probably rare (0.18% (1/559) compared with the present rate (according to Mattei J.F. 1973) in Europe generally (0.6%) or in France (1%). This, in some way, explains the low rate of diseases linked to the gene factor observed in this investigation.

General observations

Economy

A low level of economic development is the main origin of the appearance and spreading of many diseases, particularly in children, and further influence is exerted by cultural factors and social customs and habits. Culture being in some way the product of the economic infrastructure, the low cultural level restricts the diffusion of medical knowledge on pregnancy, childbirth, nutrition, hygiene, prophylaxis, and is responsible for the persistence of many backward habits which, in turn, make for the propagation of diseases.

Health

This problem concerns the whole society and all men. Health protection must not only be the concern of the Public Health department but is also the responsibility of all branches and organs of the State apparatus. The Public Health service only plays a modest role. Its field of action is to build up on the basis of the superior organization of the community, a widespread and efficient medical network which can look after every family and even every inhabitant, study and propose prophylactic measures suited to each disease and each age group and, should the disease happen, give efficient treatment by all means at its disposal. In short the sanitary network and medical organization can make its efficiency felt only on the basis of a fully developed economy and culture. In other words, *economic development* and *improvement of the living standards* are imperative requirements for the development of public health.

Our health service has an extensive network spreading to each commune, each hamlet, each production brigade and has also made an important contribution to the protection of the health of the entire population, chiefly of mothers and children. However, it still shows many weaknesses and shortcomings which we can remedy only by perfecting it and making it more efficient.

Besides, in the present economic conditions, a more rational distribution and utilization of products can contribute to improving the living standards of the population.

Summary

Thus a thorough investigation of the relationship between economic, cultural and social factors and infantile morbidity has been made in a commune on 66.3% (539/843) of the total of children (aged less than 15 years).

The authors have analysed the relations between the economic and cultural factors, the habits of hygiene and the aspects of children's diseases, and have studied from various angles the situation with regard to pregnancy, childbirth, nutrition of infants, crèches. And from the data collected, they have made some general remarks. 1. *the economic and social origins of diseases; 2. the field of action of Public Health in the protection of the population's health; 3. the rural environment and medical researches.*

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PRINTED IN THE SOCIALIST REPUBLIC OF VIETNAM

In the difficult conditions — economic, social and cultural — of the developing countries, how to organize a health-care network covering the whole country and effectively apply the achievements of modern medical science, especially in the rural areas?

An answer to these questions may be found in the health work done at PHUNG CONG, a village in the Red River delta and a model for building a preventive medicine with a social character for a rural environment.

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