

Chronic Impairments that Lead to Respiratory Diseases

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ABSTRACT

Disability study was carried, out in 1977 in 14 provinces of Indonesia; a sample of 22.568 individuals was obtained with a percentage distribution of 17.6% urban and 82.4% rural.

A special questionnaire was prepared and all members in a household were interviewed. The data presented here are only for the respiratory diseases and the diagnosis based on the ICD 9th Revision.

Diseases of the respiratory system ranks second among most important diseases with prevalence rate of 64.02 per 1000. It is most prevalent in early infancy and childhood age 1 to 9 years and again after 25 years.

Incidence among males show no differences in both urban and rural areas, while females tend to be lower in rural area. In the age group 35 to 44 years both sexes show no differences in the prevalence rates but in the age group 45 to 54, rate become very high, with a marked difference female is lower than male.

Since respiratory diseases are largely controllable and reversible, early diagnosis and prompt treatment are necessary so that chronic impairments and a loss of manpower for economic development due to respiratory complications do not occur in later life.

INTRODUCTION

Respiratory diseases have a widespread geographic distribution occurring during infancy and childhood, and repeated attacks of the upper respiratory infections is an important cause of lower chronic respiratory disease in later life. The most common respiratory infections are : adenovirus infections, mycoplasmal infections, para influenza) viral disease, influenza and rhinoviruses, common colds, respiratory syncytial virus, and others.

CAUSES OF THE RESPIRATORY INFECTIONS

There is at the moment increasing awareness of the importance of upper respiratory infections. They occur as a result of an interaction between 3 factors, the host, the infectious agent and the environment.

The Host

In developing countries where nutrition plays an important role, children who suffer from various kinds of infections like respiratory infections may result in the impairment of natural and acquired immunologic deficiencies. This condition may further impair the child's capacity to fight infection which has already been reduced by malnutrition:

The Agent

Many agents are responsible for respiratory diseases, varying from viruses, bacteria, fungal and parasitic infections. Viruses are supposedly the most important initiators of minor respiratory infections while bacteria most often cause severe pneumonias.

Infants most commonly have adenovirus infections as coryzal

symptoms, but occasionally causes fulminant bronchiolitis and pneumonia. In older children, pharyngitis and tracheobronchitis are most prevalent. Clinical manifestations such as abrupt onset, fever, cough, pharyngitis, rhinorrhoea and pulmonary rales are common. No antiviral chemotherapy is effective, only symptomatic treatment is needed.⁽¹⁾

In mycoplasmal infections of the upper airways the onset is insidious, in contrast to the abrupt onset of adenoviral or influenzal pneumonia. Pleural effusions, pericarditis and myocarditis are most common complications. Acute respiratory syncytial virus infections are more common in adults. Infections are usually asymptomatic but usually associated with rhinorrhoea, pharyngitis, cough, headache, fatigue and fever. In the elderly these infections is a cause of bronchilitis and severe pneumonia.⁽²⁾

Para Influenza viral diseases have a widespread geographic distribution and are an important cause of lower respiratory tract disease during infancy and childhood, ranging from inapparent infection to life-threatening lower respiratory tract disease.

Clinical manifestations in children, is usually consist of rhinitis, pharyngitis and bronchitis, cough, hoarseness and fever leading to bronchiolitis, bronchopneumonia and pneumonia.⁽³⁾ Influenza is usually a self-limiting febrile illness, with high fever for one to five days with systemic signs and symptoms. Later cough is most frequent.

The common cold is probably the most frequently occurring illness in humans worldwide. The incidence is about 41.1 per 100 persons per year. More than 100 distinct common cold viruses have been discovered and shown to be the major causative agents of the common cold. All these agents are named as the rhinoviruses since they cause nasal symptoms. Shortly thereafter another group of viruses, the corona viruses were discovered and shown to be the second most important etiologic agents of the common cold and related diseases .1) Rhino-viruses have emerged as the major known causative agents of adult upper respiratory illnesses such as the common colds and constitute from 15 to 40% of common cold in adults. The corona viruses also constitute 10 to 20% of common colds in adults.⁽⁴⁾

Common cold represent 19,15% of all acute conditions and estimated to cause over 261 million days of restricted activity.

The Environment

Certain environmental circumstances favour the transmission of Acute Respiratory Infection (ARI) agents from one person to another, infection passed around within families, often being brought from school.

Some agents are carried by droplets in the air, others passed by touch from one person to another. In some places where agents show a seasonal pattern, climate may also be a factor.⁽⁵⁾

OTHER FACTORS

Cause in the host

Nutrition : A defective immune response is often associated with malnutrition. In addition to impaired cellular immunity,

malnutrition is accompanied by other defects in the ability of the white blood cells to fight disease and by low blood levels of complement, a substance present in the blood serum of plasma which is necessary to complete the destructive action of antibodies against bacteria. In children with poor nutritional status acute respiratory infections can become very serious, even leading to death. (1)

Low birth weight (LBW) is known to be a risk factor; infants with less than 2500 g body weight are much more prone and die from serious acute respiratory infections.'

Vitamin A deficiency can cause xerophthalmia and is closely linked with illnesses such as diarrhoea. Vitamin A is known to have important effects i on the mucosal surfaces and deficiency of this vitamin could impair defences in the respiratory epithelium. (4)

Genetic and acquired defects can also make some children abnormally vulnerable to acute respiratory infections. The spleen plays a crucial role in bodily defences against some respiratory pathogens : when it is removed or is not functioning properly, children are especially susceptible to bacterial pneumonia and overwhelming bacterial infections. Children with defects in the immune system may suffer frequent bouts of pneumonia. Cystic fibrosis is also pose a significant problem because of their susceptibility to acute respiratory infections:⁽⁶⁾

Cause in the environment

Smoke increases the risk of acute respiratory infections. This may come from traditional stoves burning firewood and straw. Biomass fuels produce high nitrogen dioxide levels as well as other toxic pollutants, and it is probable that these pollutants have some adverse effects on the child's respiratory defence mechanism.⁽⁷⁾

Tobacco smoke. Children who come from homes in which neither parent smoke have fewer and less severe acute respiratory infections than those who come from homes where parents smoke, and it has been shown in some studies that cotinine (metabolite of nicotine) was found in their urine and saliva. It is possible that smoke inhalation causes paralysis of the ciliae in the respiratory tract. (3)

Domestic cooking smoke. In a study that was carried out in Nepal, it was found that children under one year of age, who spent longer time close to the fire place each day, were more likely to experience moderate and severe acute respiratory infections.

The possible role of domestic cooking fuel in acute respiratory infections has been investigated in Britain and USA, and it seems that exposure to nitrogen dioxide from gas cooking stoves may increase risk. Biomass fuels produce high nitrogen dioxide levels as well as other toxic pollutants, and it is probable that these pollutants have a range of effects on the child's respiratory defence mechanisms. ⁽⁸⁾

In 1977 a study was carried out to collect information on some aspects of the problems of disability as a whole in the community and to determine the various types of impairments that lead to disability.

METHOD AND MATERIAL

A five stage random sampling design was used for this

survey, and the study population was based on the 1971 census. Fourteen provinces were selected with a percentage distribution of 17.6% urban and 82.4% rural, involving 93 rural and 24 urban regencies/municipalities respectively. A final sample of 22,568 individuals was obtained.

A special questionnaire form was prepared for each household, and all individuals in the household were listed. The questionnaire was completed by the Health Centre doctors of the area.

The main items included the following :

- 1) Descriptive data such as name, age, sex, education, occupation, marital status, relation to the household, address, etc.
- 2) Type of impairments in the house occurring during the last 3 months with more or less persistent symptoms of cough, almost everyday with or without expectoration, such as chronic bronchitis, asthma, emphysema, tuberculosis, or other lung disease were recorded. The diagnoses were coded into the 4th International Classification of Diseases (9th Rev).

RESULTS

Respiratory diseases rank second in order in the important symptoms of chronic impairments for both sexes with a prevalence rate of 64.02 per 1000 (Table 1).

Table 1. Frequency of diagnosis for the most important symptoms of chronic impairments for both sexes combined (No interviewed : 22568)

Diagnosis category	flank	Number of individuals	Proportional percent	Prevalence rate Per 1000
Diseases of oral cavity, salivary glands & jaw	1	1663	22.6	73.68
Diseases of respiratory system	2	1445	19.6	64.02
Diseases of circulatory system/hypertension	3	887	12.0	39.30
Musculo-skeletal and connective tissue	4	687	9.3	30.44
Skin & sub cutaneous tissue	5	666	9.0	29.51
Disease of digestive system	6	388	5.3	17.19
Diseases of eye & adnexa	7	369	5.0	16.35
Nutritional deficiencies/underweight	8	350	4.7	15.50
Diseases of ear & adnexa	9	232	3.1	10.28
Fevers of unknown origin	10	118	1.6	5.23
Accidents, fractures	11	58	0.8	2.57
missing limb	12	53	0.7	3.35
Poliomyelitis, spastic muscles	13	457	6.2	20.25
Others				
Total		7373	100.0	

Table 2. shows that below 34 years of age the prevalence rate for male is 32.47 and that of 35 years and above is 174.16. The picture for female is also similar for those below 34 years the prevalence rate is 33.32 while for those from 35 years and

Table 2. Total number of respiratory diseases by age and sex

Age	Male	Female	Total	Prevalence rate per 1000	
				Male	Female
< 1	6	6	12		
1 - 4	50	53	103		
5 - 9	57	68	125		
10 -14	30	28	58	32.47	33.32
15 -24	46	50	96		
25 -34	69	70	139	-	
35 -44	127	82	209		
45 -54	171	91	262	174.16	109.85
55 - 64	168	83	251		
65 & above	115	75	190		
Total	839	606	1445		

above, it is 109.85. It can be seen that the prevalence rate for both sexes below 34 years are almost the same, but above 35 years of age the rate are higher, especially in the male group. This may be due to other causes, such as male smokes more, and more in contact with industrial fumes and heavy metals (Table 2).

Among all types of the respiratory diseases, especially in the early infancy and childhood (age 1 to 9 years), the prevalence of chronic bronchitis, is high in both sexes. There is a slight decrease in the younger age group (10 - 24 years). Beyond 25 years all respiratory diseases tend to rise with age especially in male. Chronic pharyngitis, viral infections, chronic common cold, chronic sinusitis, emphysema etc. are included in 'others' category (Table 3)

Comparing between urban and rural areas for chronic impairments, the incidence in male seem to be higher than female in both areas. Factors that may be responsible will be discussed later (Table 4).

Chronic impairments in the 35 - 44 age group year show no difference between sexes, but chronic impairments in males aged > 45 year seem to be higher than in female (Table 5).

DISCUSSION

This paper will discuss the figures of the respiratory diseases, obtained from the Disability Study which was carried out in 1976, from a sample of 22,568 individuals drawn from 14 provinces (whole population 1971: 98.950.904).

Chronic impairment is defined as a permanent or transitory psychological, physiological or anatomical loss and/or abnormality occurring in a household during the last three months with more or less persistent symptoms. i.e : a missing or defective part of tissue organ or mechanism of the body, such as amputated limb, paralysis after poliomyelitis, myocardial infarction, cerebrovascular thrombosis, restricted pulmonary function as in chronic bronchitis, asthma etc.

Rapid technological developments and urbanization has created changes in the attitude, knowledge and behavior of the

Table 3. Different types of respiratory diseases by age and sex

Age in years	Males					Females				
	Chr. bron	Asthma	T B	Others	Total	Chr. bron	Asthma	T B	Others	Total
< 1	6	-	-	-	6	4	1	-	1	6
1 - 4	18	13	7	12	50	28	15	2	8	53
5 - 9	24	17	6	10	57	32	23	5	8	68
10 - 14	17	4	2	7	30	12	9	5	2	28
15 - 24	17	9	16	4	46	22	12	9	7	50
25 - 34	22	12	27	8	69	16	12	40	2	70
35 - 44	48	17	50	12	127	38	12	18	14	82
45 - 54	60	24	75	12	171	29	11	44	7	91
55 - 64	66	42	41	19	168	25	13	38	7	83
65 & above	53	19	32	11	115	19	5	39	12	75
Total	331	157	256	95	839	225	113	260	68	606

Chr bron - chronic bronchitis
 TB - pulmonary tuberculosis

Table 4. Number and percentage of cases of chronic impairments due to respiratory diseases by area of residence and sex

Sex	IMPAIRMENT	Urban (614)		Rural (3070)		Total (3684)	
		No	%	No	%	No	%
Male	Respiratory disease	158	25.7	681	22.2	839	22.8
	No respiratory disease	456	74.3	2389	77.8	2845	77.2
Female		Urban (701)		Rural (2988)		Total (3689)	
	Respiratory disease	128	18.3	478	15.9	606	16.4
	No respiratory disease	573	81.7	2510	84.1	3083	83.6
		Urban (1315)		Rural (6058)		Total (7373)	
Total	Respiratory disease	286	21.7	1159	19.1	1445	19.6
	No respiratory disease	1029	78.3	4899	80.9	5928	80.4

population, many factors will increase the risk of chronic respiratory diseases that lead to disabling impairments and permanent damage of the lungs.

Since chronic impairments tend to increase with age (table 2) early steps to treat repeated attacks of upper respiratory tract infections have to be taken on the young age group 5 to 9 years and also those from 25 years and above, since repeated respiratory tract infections during infancy and childhood may lead to chronic respiratory impairments.

Respiratory diseases are largely controllable diseases. Therefore interaction between the host, the infectious agent and the environment should be interrupted by early diagnosis and treatment, preventive measures to prevent recurrent attacks, good

nutrition and a healthy living environment. Good nutrition will increase the ability to produce the defense mechanisms.

Accurate diagnosis, early and prompt treatment will reduce the occurrence of the respiratory infections.

Environmental factors such as smoke from various industries and congested traffic as well as from smoking, can all lead to upper respiratory tract diseases. In urban areas, (Table 4) more males from rural areas migrated to the more densely populated city, especially young adults who come to the cities to find work. Also in the rural areas males seem to have a higher prevalence of the chronic impairments. Factors that might caused differences in males for both urban and rural areas is because males smoke more, poor nutritional status of health and ignorance in healthy living. On the other hand females also do not show much differences in both urban and rural areas, which might be due to females who tend

to try to hide their ailments, or neglect the symptoms.

Similarly, some of the above factors could be applied to males who seem to show higher prevalence rate per 1000 population in the age group of 34 to 44 years and 45 to 54 years being 92.76 and 165.69 respectively, in the age group 45 to 54 years there is a difference between males and females (Table 5).

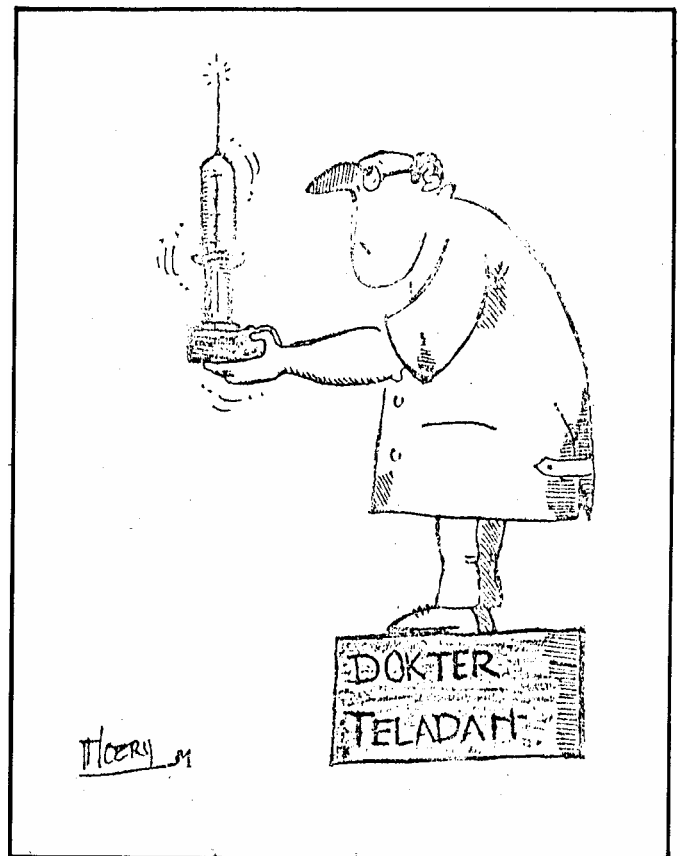


Table 5. Total number of cases of chronic impairments due to respiratory diseases in two age groups and sex

Age group in years	Male (No : 2401)		Age group in year	Female (No : 2053)			
	No	%		No	%		
35 - 44 (No : 1369)	Respiratory disease	127	24.3	35 - 44 (No : 1357)	Respiratory disease	82	24.4
	No respiratory disease	1242	75.7		-	No respiratory disease	1275
45 - 54 (No : 1032)	Respiratory disease	171	32.5	45 -54 (No : 869)	Respiratory disease	91	21.9
	No respiratory disease	861	67.5		-	No respiratory disease	778

It can be concluded that most of the respiratory diseases are largely treatable and can be prevented from developing into chronic impairments. Thus it is important to inform the public regarding the awareness of the importance of the respiratory diseases and that they should find help for every minor symptoms.

CONCLUSION

There is a need to improve the health of the whole population which requires proper delivery of the services provided and the process of dissemination of information, thus promoting efficiency and efficacy in health intervention programs. Breaking

the cycle of illness between the host, infectious agent and the environment are very important as a basic requirement of modern life. By the year 2000 large cities will have a large proportion of urban slums and low income groups in the periphery. This condition will further aggravate the precarious conditions of health, garbage disposal problem and other services that are necessary for the maintenance of health.

Pollution of air, water, soil and the whole environment will create even greater challenges in the future. Most important is the effort to prevent or reduce the negative effects and thereby mobilize the community, which involves citizen education especially the young so as to in-

sure proper health concepts and that people will understand their own essential contribution to the solution of health problems. ⁽⁶⁾

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