Setting Priorities
of Health Problems and
Providing Appropriate
Interventions in Kathmandu
District, Nepal

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of Health Problems and
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Acknowledgements

Table of Contents

Tables

Figures

Abstract

Setting Priorities of Health Problems and Providing Appropriate Interventions in Kathmandu District, Nepal

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The purpose of this study is to prioritize health problems of Kathmandu district, Nepal using Bryant's method of setting priorities to implement desirable interventions in the field that are efficient, cost-effective, feasible and sustainable to reduce morbidity and mortality.

The framework used for this study is John Bryant's method of setting priorities using a panel of 32 public health professionals, 26 Nepali and 6 Korean.

Kathmandu district is situated in the central hilly region of Nepal, and consisting of a population of 914,326. It is an urban district with much of the resources utilized here than other districts of the country. Even then, primary health care is a necessity as the urban poor population is growing.

The results of this study show that the highest priority has been given to maternal and perinatal disorders followed by infectious and parasitic diseases, nutritional problems, environmental health problems,

tuberculosis, population growth, STD/HIV and hepatitis B. All of these health problems can be considered to be of primary importance and adequate interventions in the form of programs should be implemented. The essential programs would be Reproductive Health including Safe Motherhood, Curative Health Services, Expanded Program on Immunization, Nutritional Supplementation, Education and Rehabilitation, Environmental Sanitation, Tuberculosis Control, Family Planning, and STD/HIV and hepatitis B Control.

I. Introduction

1.1. Background

Nepal is a developing country with many challenges. Its population is about 23.9 million consisting of various ethnic groups. it encompasses three distinct ecological belts: the mountains in the north, the hills in the central region, and the narrow plains in the south. Kathmandu district falls in the central hilly region.

The per capita income is just US $230 which is very low compared to other countries. Also 90% of the people live in the rural areas. A number of longstanding constraints have held back development. The population is growing rapidly, and health and sanitation conditions are exceptionally poor. The country's social and economic infrastructure is underdeveloped, and its administrative systems and institutions lack the capacity to plan and effectively implement programs. In recent years, social and political unrest has further weakened development efforts in general and health care delivery in particular.

Poverty remains widespread in Nepal. Almost 42% of the rural population lives below the poverty line, with a much higher incidence of poverty in the more remote areas. The costs of basic necessities, including access to health and education services, are often far beyond the reach of the poor. While improvements have occurred in recent decades, health status remains very low.

The overall burden of disease in Nepal is high relative to other countries in the region. Particularly high is the burden of infectious diseases, maternal and perinatal disorders, and conditions resulting from

nutritional disorders – all illnesses associated with countries in the first stage of epidemiological transition.

Nepal's health sector is constrained by several factors. Public sector spending (including donor expenditures) on health care is very low. The planning, provision and financing of health care and the delivery of health services is done largely on ad hoc basis. The result is gross inadequacies in terms of infrastructure, human resources, and service delivery. Many health facilities lack service providers and are perpetually short of essential drugs and supplies.

The dynamics of Nepal's demographic change affect its development prospects and epidemiological transition. The rapid population growth in Nepal is a crucial factor leading to poverty. By eroding the limited gains made in GDP and food production, population growth severely constrains per capita income and consumption and retards development in the social sectors. Even under relatively optimistic scenarios, Nepal's population is likely to grow at an annual rate of about 2% in the foreseeable future (World bank, 2000, p.5-7).

Demographic characteristics reveal the poor state of health in Nepal. Fertility, morbidity and mortality rates are high. The total fertility rate is 4.4, the infant mortality rate is 77 per thousand live births, the below 5 years mortality rate is 107 per thousand, and the maternal mortality rate is 540 per hundred thousand live births. Life expectancy at birth is a mere 58 years.

The health sector in Nepal is mostly controlled by the government and only a small sector is available to the private organizations, non-governmental organizations (NGOs) and international non-governmental organizations (INGOs). Therefore there is a great responsibility on the part of government that it makes appropriate

health policy strategies.

The above is a sketch of the background of Nepal to understand some of the problems that relate to Kathmandu district, the setting of this study. Kathmandu district has a total population of 914,326 according to the Annual Report (1999-2000), Ministry of Health, Nepal. This Report reveals that the target population for expanded program of immunization of below 1 year population is 19,765. Similarly, target population for acute respiratory infections and control of diarrhoeal diseases of below 5 years population is 95,115, and target population for nutrition of below 3 years population is 55,449.

Regarding health facilities, Kathmandu district has 4 government hospitals, 6 primary health care centers, 6 health posts, and 54 sub-health posts, a total of 70 health institutions. There are also 199 primary health care outreach clinics (Annual Report, 1999-2000).

1.2. Rationale

Kathmandu district was selected for the need to know the extent of health problems facing an urban community whether of public health or clinical nature. Also the data would be more accessible and it would be easy to communicate with public health professionals based in Kathmandu.

Even though Kathmandu district has many advantages such as better facilities and better resources than the rest of the country, it still faces the problems of communicable diseases more than non-communicable diseases. Health problems include reproductive health, population growth, injuries and accidents, tuberculosis, environment health problems,

sexually transmitted diseases, HIV/AIDS, alcohol and substance abuse. The problem of overcrowding is due to the influx of many poverty-stricken people lured to Kathmandu in search of better opportunities and life-style.

The confirmation of preventive and public health care needs cannot be done through a direct health interview survey of the community population because, in general, the individuals in the community do not recognize the necessity for the preventive and public health care. The identification of preventive and public health care need requires the consideration of socioeconomic and cultural factors as well as a process of judgement. Therefore a panel of public health professionals were used to set up priorities.

Setting priorities of health problems is necessary as the amount of health care demands and needs is extremely large while the money, manpower and material resources available to meet these needs is relatively small. Determining health priorities helps direct resources to the areas that matter most to community partners and that will have the greatest impact on community health status. In other words, there will be effective utilization of resources. Therefore it was rational to set up priorities in a community such as Kathmandu district so that the most urgent and essential problems received the amount of attention they deserved.

II. Purpose of Study

The purpose of the study is to provide a framework, that is, John Bryant's method of setting priorities of health problems to facilitate the prioritization of health problems of Kathmandu district, implement desirable interventions in the field that are efficient, cost-effective, feasible, and sustainable to reduce morbidity and mortality in the community.

III. Methodology

Kathmandu district situated in the central hilly region of Nepal, and consisting of a population of about 914,326, was selected for setting up priorities of health problems related to its community.

The framework selected for this study is John Bryant's method of setting priorities using a panel of public health professionals. In this study, a panel of 32 public health professionals contributed in setting up priorities.

Firstly, fifteen major public health problems of Kathmandu district were chosen after consulting public health professionals, preventive and public health textbooks, and latest health reports such as the Annual Report 1999/2000, Ministry of Health, Nepal.

A questionnaire was constructed based on Bryant's 4 criteria of setting priorities. Bryant developed 4 criteria for priority setting. The first criteria is prevalence. This indicates the magnitude of a particular health problem, and if the magnitude increases the priority is correspondingly increased. The second criteria is the seriousness of the health problem. This criteria focuses on how much or how seriously a certain health problem affects the individual or society. The third criteria is the concern of the community. Concern for a particular problem is manifested by a demand from the community members for its solution. Since health problems are closely related to the culture, socio-economic conditions and attitudes of the community, it is natural that the health problems about which the community is concerned should receive high priority because these are the problems about which there is a high felt need by the population. However, it is difficult to

accurately gauge the degree of concern of a community. The fourth criteria is vulnerability (susceptibility) to management. Even if the health problem is considered large-scaled and serious, if it is not amenable to solution because of financial or technical difficulties, it should be given low priority to avoid wasting valuable resources on an insoluble problem (Kim et al., 1977, p.27). In considering this susceptibility to management, special preference will be given to management within the community, partly for economic reasons but mainly because the community will be involved (Morley, 1975).

The questionnaires were e-mailed to some professors of Preventive and Public Health Department, Yonsei University, Korea and to some public health professionals at Kathmandu, asking for suggestions and review. After feedback, the suggestions and advice were incorporated and a revised questionnaire constructed. The revised questionnaires were sent via e-mail to 30 public health professionals at Kathmandu and 6 public health professionals at Yonsei University. Along with the questionnaire was attached available secondary data regarding Kathmandu district, about morbidity (total OPD, that is, out-patient department new visits per 1000 population) and other data relating to nutrition, expanded program on immunization, family planning, safe motherhood, tuberculosis, acute respiratory infections and diarrhoeal diseases.

The nutrition data showed proportion of malnourished children (wt./age) below 3 years children to be 17.9%. The vitamin A treatment coverage for this group was 2.6%. The iron tablet distribution coverage for expected pregnancies was 13%. The EPI (expanded program on immunization) coverage was more than 100% for BCG, DPT3, Polio3 and Measles. The TT2 immunization coverage for women of child

bearing age (WCBA) was 6.4%. The family planning data revealed number of temporary method current users to be 83,614. Current VSC (voluntary surgical contraception) users were 43,949. Total users of all methods of contraception were 127,563. The CPR (contraceptive prevalence rate for VSC was 26.25%. The total CPR was 76.19. Regarding safe motherhood, the ANC (antenatal care) first visits as a percentage of expected pregnancies was 24.6%. The average number of ANC visits per case was 2. The total number of deliveries conducted by trained persons was 15,125. The PNC (postnatal care) first visits as a percentage of expected pregnancies was 2%. The tuberculosis data showed total patients to be 2,416. The prevalence rate for tuberculosis was 2.64 per 1000 persons. Regarding acute respiratory infections and diarrhoeal diseases, the data showed that the incidence of ARI (acute respiratory infections) per 1000 below 5 years population to be 76 and the incidence of diarrhoea in the same population to be 92. The diarrhoeal deaths in this age group was 0.01 (Annual Report, 1999-2000).

If accurate quantitative data are available for each of the 4 criteria mentioned, priorities can be built based on the data. However, most of the data may be inaccurate, incomplete or inadequate. Even though the correct data may be available, the use of heterogenous standards in data collection makes comparison of the criteria difficult or impossible.

The panel of public health professionals were asked to give a score to each criterion ranging from 1+ to 4+ depending on the degree of severity of the problem. They were encouraged to be as objective as possible in their judgement and to attempt to avoid prejudiced opinions based on personal concerns and attitudes, because such subjective judgements reduce the validity of the priorities. The method is easy to

use and an approximate estimation of the value of each of the criteria can be made even though the available data are not appropriate and accurate.

After a period of 6 weeks, all the filled out questionnaires were received via e-mail and personal contact except 4 from Kathmandu based health professionals. The total questionnaires collected was 32.

The panel of Nepali public health professionals consisted of professors, assistant professors, lecturers working at Tribhuwan University Teaching Hospital, Kathmandu and government employed public health officers, the former totalling 10 and the latter 16. The panel of Korean public health professionals, totalling 6, consisted of professors and assistant professors of the Preventive and Public Health Department of Yonsei University. These professionals had good knowledge about the public health situation of Nepal and Kathmandu and had visited Kathmandu.

The scores obtained from the questionnaires were tabulated, and a total priority score for each problem was calculated by multiplying together the scores on each of the 4 criteria. Finally, the total priority scores of each evaluation for each problem were averaged, to eliminate in as far as possible, individual prejudice. Ranking of the health problems was done according to the highest scores. Those problems with the highest total scores are assigned highest priority for solution.

After setting the priority of a particular problem, a decision should also be made as to the extent of coverage to be given to the priority problem. This requires consideration of such factors as size of the target population and the qualitative aspects of the problem solving measures. The priority of health problems can directly be shifted to health programs. Therefore, the decision of priorities is usually based on

health problems, while the specific methods of solution are health programs (Kim et al., 1977, p.27-28).

3.1. Limitations

Sufficient data and latest census of Kathmandu district could not be provided to the panel of public health professionals for reference due to inaccessibility.

Even though it is a fact that developing countries have a pyramidal type of population structure, the exact age-groups and their size could not be accessible.

The available data provided for reference is insufficient and maybe inaccurate. Though after the HMIS (Health Management Information System) was established in the Department of Health Services, there has been more systematic collection of data, still there are many problems of reliability and validity.

In this study, it is difficult to measure the concern of the community because there is lack of a health interview survey, but then, the community is not in a position to judge the values of public health.

The method is also directed toward health problems rather than population groups. Particular groups are implicitly involved in some instances-for example, malnutrition is found largely in small children, and pregnancy involves only women – but otherwise the method does not take into account special groups in the population (Morley, 1975, p.61).

A defect of the Bryant's method is that the 4 different criteria are each afforded the same degree of importance when in actuality they

may have quite different degrees of priority and does not necessarily indicate the degree of importance. Even if the score of one problem is two times higher than that of other problems, this does not necessarily mean the former problem should receive a budget two times greater than the latter.

IV. Results

The results of this study are based on the expert feedback of 32 public health professionals, 26 Nepali and 6 Korean, regarding the prioritization of health problems of Kathmandu district using Bryant's criteria of setting priorities. The feedback on questionnaires of 26 Nepali public health professionals were received via e-mail whereas in case of Korean public health professionals feedback was received via e-mail and personal contact. All the feedback questionnaires were collected and tabulated. Calculation was done by multiplying each of the 4 criteria of each health problem. The total priority scores of each evaluation of each health problem of the 32 health professionals were averaged to eliminate individual prejudice. Ranking of the health problems was done according to the highest scores. Those problems with the highest total scores are assigned highest priority for solution.

Table 1 shows the general characteristics of public health professionals who participated as evaluators for this study. Age category consisted of three groups: 30-39 years, 40-49years and 50 years and above. 71.9% of evaluators were in the age groups below 50 years. In the gender category, 81.3% were males compared to 18.8% of females. By profession, two groups were formed: public health professionals involved in university, such as, professors, assistant professors, lecturers, research fellows; and in the government or non-government organizations, such as, public health officers. These two groups were equally divisible into 50% each.

Table 2 shows the health problem priorities of Kathmandu district set by total public health professionals using Bryant's method. It shows

Table 1. General characteristics of public health professionals

Characteristics	Nepali		Korean		Total	
	n	(%)	n	(%)	n	(%)
Age						
30 – 39 yrs.	11	(34.4)	2	(6.3)	13	(40.7)
40 – 49 yrs.	9	(28.1)	1	(3.1)	10	(31.2)
50 yrs. and above	6	(18.8)	3	(9.4)	9	(28.2)
Gender						
Male	20	(62.5)	6	(18.8)	26	(81.3)
Female	6	(18.8)	0	(0.0)	6	(18.8)
Profession						
Professor	1	(3.1)	3	(9.4)	4	(12.5)
Assis. Prof.	2	(6.3)	2	(6.3)	4	(12.6)
Lecturer	7	(21.9)	0	(0.0)	7	(21.9)
Research fellow	0	(0.0)	1	(3.1)	1	(3.1)
Public health officer	16	(50.0)	0	(0.0)	16	(50.0)
Total	26	(81.3)	6	(18.8)	32	(100.0)

mean scores, standard deviations and ranking of health problems. In evaluating the health problems of this district, the highest priority has been given to maternal and perinatal disorders followed by infectious and parasitic diseases, nutritional problems, environmental health problems, tuberculosis, population growth, STD/HIV and hepatitis B. High priority received by these health problems means that the goal should be to control these problems by formulating objectives, selecting target populations, and applying most suitable interventions that are efficient, cost-effective, feasible and sustainable. The first seven prioritized health problems can be considered as primary problems and the rest of the eight problems, that are, alcohol and substance abuse including tobacco, injuries and accidents, chronic respiratory diseases, eye and ear problems, cancers, mental health, cardiovascular diseases, and oral health can be considered as secondary problems.

Fig. 1 shows a bar diagram of health problems priority of Kathmandu district set by total public health professionals using Bryant's method.

Table 3 shows the health problems priority of Kathmandu district set by Nepali public health professionals using Bryant's method as a separate group. It shows the mean scores, standard deviations and ranking of health problems. Compared to the total group evaluation, this Nepali group gives more emphasis to tuberculosis and STD/HIV and hepatitis B by ranking it second and third. This is reasonable as tuberculosis is still a major health problem in developing countries. Also the STD/HIV and hepatitis B cases are rapidly increasing due to multiple factors, such as, lack of awareness about the transmission of these diseases, needle sharing among drug addicts, prostitution, open borders with India, tourism industry. This Nepali group also considers alcohol and substance abuse as a primary problem (if the first seven

Table 2. Health problems priority of Kathmandu district set by total public health professionals using Bryant's method

Health problems	Mean score	Standard deviation	Rank
Maternal and perinatal disorders	94.7	85.3	1
Infectious and parasitic diseases	89.1	73.4	2
Nutritional problems	72.1	58.7	3
Environmental health problems	63.8	64.1	4
Tuberculosis	61.9	67.4	5
Population Growth	61.6	66.1	6
STD/HIV and hepatitis B	54.8	59.1	7
Alcohol and subs. abuse (plus tobacco)	46.4	40.8	8
Injuries/accidents	43.5	33.7	9
Chronic respiratory diseases	33.8	28.5	10
Eye/ear problems	32.3	29.1	11
Cancers	30.9	36.4	12
Mental health problems	28.8	45.3	13
Cadiovascular diseases	23.7	24.3	14
Oral health problems	22.3	24.2	15

Figure 1. Health problems priority of Kathmandu district set by total public health professionals using Bryant's method

Table 3. Health problems priority of Kathmandu district set by Nepali public health professionals using Bryant's method

Health problems	Mean score	Standard deviation	Rank
Maternal and perinatal disorders	82	77.8	1
Infectious and parasitic diseases	65	47.3	2
Tuberculosis	65	67.7	2
STD/HIV and hepatitis B	62.7	61.6	3
Population Growth	59.4	58.8	4
Nutritional problems	58.5	42	5
Environmental health problems	54.4	41.3	6
Alcohol and subs. abuse (plus tobacco)	52.2	41.3	7
Injuries/accidents	39.1	30.6	8
Chronic respiratory diseases	36.4	28.2	9
Cancers	35.2	39	10
Mental health problems	33.3	49	11
Cadiovascular diseases	27.8	25.1	12
Eye/ear problems	27.5	23.5	13
Oral health problems	18.9	20.1	14

prioritized health problems are regarded as primary problems).

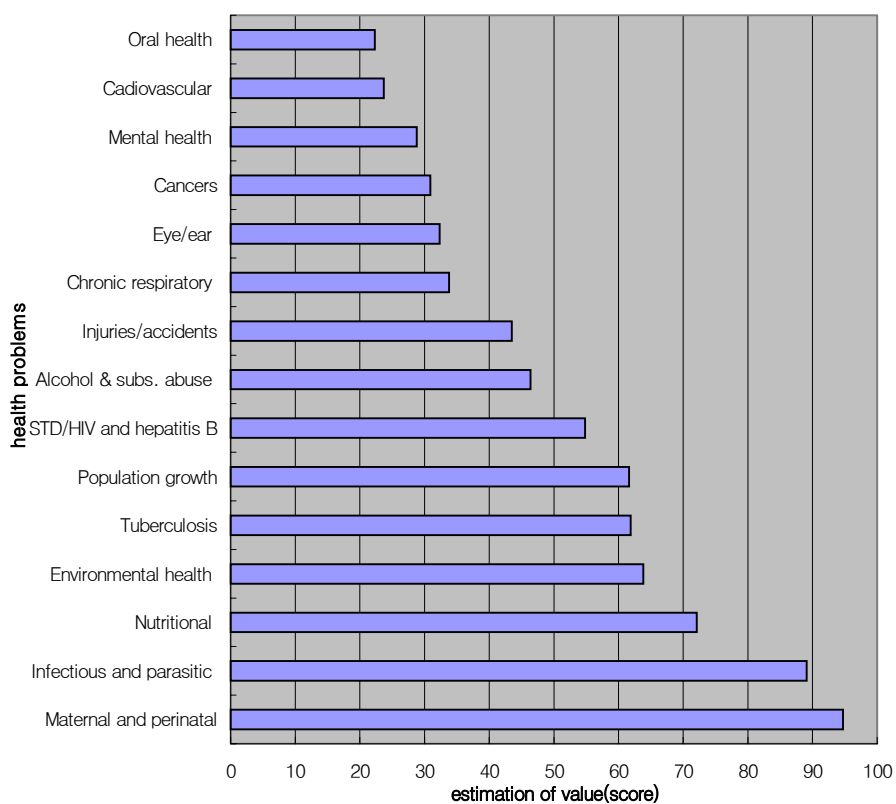Table 4 shows the health problems priority of Kathmandu district set by Korean public health professionals using Bryant's method as a separate group. It shows the mean scores, standard deviations, and ranking of health problems. Compared to the total group evaluation, this group gives higher priority to injuries and accidents, and eye and ear problems, and lower priority to tuberculosis and STD/HIV and hepatitis B. There may have been personal bias as Korea has high mortality related to injuries and accidents and low prevalence of tuberculosis. Also it is interesting to note that among secondary problems, the Korean group gives more priority to oral health while the total group gives it least priority.

Table 5 shows health problems priority of Kathmandu district by public health professionals according to nationality. Compared to the Korean group, the Nepalese group regards tuberculosis, STD/HIV and hepatitis B and alcohol and substance abuse as primary problems while the Korean group regards injuries and accidents and eye and ear problems as primary problems. The topmost health problem priority of Kathmandu district is infectious and parasitic diseases according to the Korean group whereas maternal and perinatal disorders is topmost priority according to the Nepali group and total group. The World Bank Report (2000) suggests that for Nepal, topmost priority is infectious diseases, followed by maternal and perinatal disorders, and nutritional deficiencies. It asks policymakers to deal with the "unfinished agenda" of dealing with infectious and related illnesses. It is interesting to see that among the secondary problems, the Korean group gives more priority to oral health while the Nepali group gives it least priority.

Fig. 2 shows a bar diagram comparing the health problems priority

Table 4. Health problems priority of Kathmandu district set by Korean public health professionals using Bryant's method

Health problems	Mean score	Standard deviation	Rank
Infectious and parasitic diseases	193.3	101.5	1
Maternal and perinatal disorders	149.8	70.8	2
Nutritional problems	131.3	98.1	3
Environmental health problems	104.7	120.5	4
Population growth	71	36.1	5
Injuries/accidents	62.3	9.2	6
Eye/ear problems	53.3	30.7	7
Tuberculosis	48.7	78.5	8
Oral health	36.8	42.5	9
Chronic respiratory diseases	22.7	42.8	10
Alcohol and subs. abuse (plus tobacco)	21.5	11.7	11
STD/HIV and hepatitis B	20.5	29.7	12
Cancers	12.7	6.5	13
Mental health problems	8.8	85.7	14
Cardiovascular diseases	6.2	29.6	15

Table 5. Health problems priority of Kathmandu district set by public health professionals according to nationality

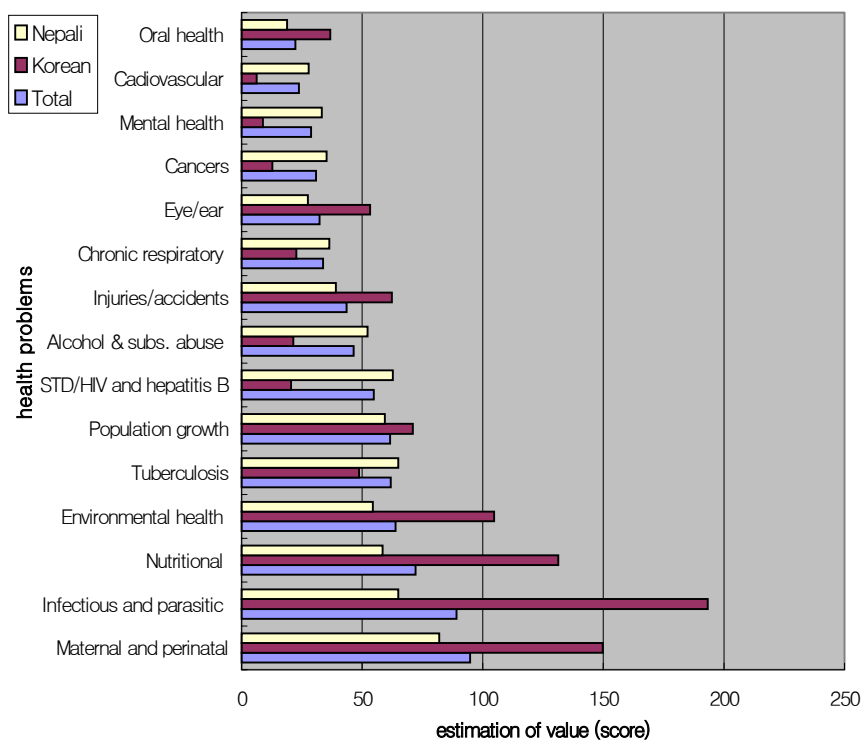| Health problems	Nepali		Korean		Total	
	mean	rank	mean	rank	mean	rank
Maternal and perinatal	82.0	(1)	149.8	(2)	94.7	(1)
Infectious and parasitic	65.0	(2)	193.3	(1)	89.1	(2)
Nutritional	58.5	(5)	131.3	(3)	72.1	(3)
Environmental health	54.4	(6)	104.7	(4)	63.8	(4)
Tuberculosis	65.0	(2)	48.7	(8)	61.9	(5)
Population Growth	59.4	(4)	71.0	(5)	61.6	(6)
STD/HIV and hep. B	62.7	(3)	20.5	(12)	54.8	(7)
Alcohol and subs. abuse	52.2	(7)	21.5	(11)	46.4	(8)
Injuries/accidents	39.1	(8)	62.3	(6)	43.5	(9)
Chronic respiratory	36.4	(9)	22.7	(10)	33.8	(10)
Eye/ear	27.5	(13)	53.3	(7)	32.3	(11)
Cancers	35.2	(10)	12.7	(13)	30.9	(12)
Mental health	33.3	(11)	8.8	(14)	28.8	(13)
Cadiovascular	27.8	(12)	6.2	(15)	23.7	(14)
Oral health	18.9	(14)	36.8	(9)	22.3	(15)

Figure 2. Comparison of health problems priority evaluation of Kathmandu district by Nepali and Korean public health professionals separately and as a total group

Table 6. Health problems priority of Kathmandu district set by public
health professionals according to profession

Health problems	Profs. / lect.		Pub. health off.		T o t a l	
	mean	rank	mean	rank	mean	rank
Maternal and perinatal	124.1	(1)	65.3	(2)	94.7	(1)
Infectious and parasitic	106.3	(2)	71.8	(1)	89.1	(2)
Nutritional	99.2	(3)	45.1	(8)	72.1	(3)
Environmental health	76.4	(4)	51.3	(4)	63.8	(4)
Tuberculosis	70.3	(6)	53.6	(3)	61.9	(5)
Population Growth	73.2	(5)	50.0	(6)	61.6	(6)
STD/HIV and hep. B	58.5	(7)	51.1	(5)	54.8	(7)
Alcohol and subs. abuse	44.9	(9)	47.9	(7)	46.4	(8)
Injuries/accidents	47.0	(8)	39.9	(11)	43.5	(9)
Chronic respiratory	32.4	(11)	35.2	(12)	33.8	(10)
Eye/ear	38.7	(10)	26.0	(14)	32.3	(11)
Cancers	21.9	(13)	40.0	(10)	30.9	(12)
Mental health	14.1	(15)	43.4	(9)	28.8	(13)
Cadiovascular	19.1	(14)	28.4	(13)	23.7	(14)
Oral health	27.3	(12)	17.2	(15)	22.3	(15)

evaluation of Kathmandu district by Nepali and Korean public health professionals separately and as a total group.

Table 6 shows health problems priority of Kathmandu district by public health professionals according to profession. The Profs. groups′ priorities are very much similar with the evaluation of the total groups′ priorities but slightly differs with the priorities of the PHOs group. The PHOs group gives a higher ranking to tuberculosis and considers alcohol and substance abuse as a primary problem. The PHOs group does not consider nutritional problems as primary problem while the Profs. group gives it high priority. Another interesting feature is that among secondary problems, mental health is regarded as high priority by the PHOs group but the Profs. group gives it least priority.

The results emphasize on adequate interventions to reduce maternal and child morbidity and mortality; to attack infectious diseases through immunization and target specific diseases like acute respiratory infections and diarrhoea; to enhance nutrition supplementation and rehabilitation; to combat tuberculosis with directly observed therapy short course (DOTS) to increase the cure rates; to stress on family planning and to raise awareness about STD/HIV and hepatitis B and promote condom use. To combat the priority problems there should be adequate interventions in the form of programs by the government as well as the private sector, NGOs and INGOs. We should make clear objectives and select the target populations. The interventions can be of short term, intermediate or long term interventions. In the short term interventions, there is a need to control communicable diseases, improve pregnancy outcomes and child survival, reduce malnutrition with a focus on access and equity. It is also necessary to address the emerging threat of HIV/AIDS through community education, advocacy, and

surveillance. Also the government should support water, sanitation, and public hygiene interventions outside the control of the Ministry of Health. The Ministry of Health should work toward effective policy analysis and planning. It should also build intersectoral collaborative capacity and limit the role of public sector to basic preventive care and essential clinical care. Also there is a need to improve the productivity of existing health infrastructure and staff, and to ensure adequate and competent personnel to staff health facilities through a performance-linked incentive system.

V. Discussion

Nepali health representatives participating in a UNICEF/WHO Regional Meeting in New Delhi in 1979 had emphasized the role of primary health care giving topmost priority to maternal and child healthcare followed by environment sanitation, treatment of simple ailments, prevention of communicable diseases, health education, immunization, provision of water supply, family planning services, nutrition (UNICEF/WHO, 1979, p.14). Those conclusions are still relevant today as the results of this study show.

More than 25 years ago, Bryant's method of setting priorities of health problems was applied to the Kang Wha Gun community in Korea. The result showed that curative services have the highest priority followed by child healthcare, tuberculosis, maternity care, clean water, family planning, and environmental health. Parasitic diseases, communicable diseases, dental health, mental health, and malnutrition all received low priority ratings. The functions of the Myun Health Subcenter (MHS) were based on these results. The highest ranking 6 priorities were considered the main functions of the MHS and the rest were considered supporting functions. Those findings are also consistent with the results of this study.

Infectious diseases, maternal and perinatal conditions, and nutritional deficiencies are the leading causes of illness and death in Nepal. It may not be fair to generalize the findings of the whole of Nepal to kathmandu, but this district does have its share of the urban poor and though non-communicable diseases are increasing, communicable diseases are still a major problem.

Persistently high infant and maternal mortality rates suggest that child health and safe motherhood services will still need to be expanded significantly. The need will be particularly great in urban areas, where the number of children under the age of 5 will increase by 43%.

The number of women of reproductive age (15-49) is projected to increase by 71%, implying the need for significant expansion of reproductive and child health services, including family planning services. The number of women of reproductive age in urban areas is expected to more than triple, indicating the need for a dramatic increase in urban service.

Death and disability due to complications of pregnancy and childbirth is a serious problem throughout the developing world. If resources will allow only 25% of pregnant women to receive care, which 25% should it be? In practice, it is usually those who seek medical assistance, whereas it can be argued that it should be the 25% whose health is most threatened by pregnancy and childbirth, and that we must find means to select these (Morley, 1975, p.63).

WHO endorses midwifery-managed births strongly, especially for normal childbirth. Well-trained midwives (who can detect early warning signs of impending complications and who refer appropriately) are sorely needed around the world. Nevertheless, the same principles of care should apply to all caregivers, be they midwives, obstetricians, or family doctors, or indeed the traditional birth attendant (Chalmers, 2002).

Increasing breastfeeding duration in low-income mothers should narrow the well-known gap between the health of this vulnerable population and that of mothers with greater resources (Pugh et al., 2002).

Tuberculosis, the fourth leading cause of Group I deaths for men and

the fifth leading cause for women, is particularly significant given its ranking and the infectious nature of the illness. For effective control, a good strategy like DOTS (directly observed treatment short course) is needed. The DOTS strategy consists of sustained government commitment, effective laboratory-based diagnosis, standard treatment given under direct observation, secure drug supply, and systematic monitoring and evaluation (Khatri, 2002).

In most developing countries, investments in primary health care have been highly cost-effective. Regrettably, such allocations have been declining in Nepal in recent years, while investments in tertiary and specialized care have been increasing. The wide disparities in benefits per rupee spent between specialized care and basic primary health care interventions clearly indicate that better health outcomes could be achieved by refocusing health programs and management attention.

Experience across the world suggests that providing a package of essential services is more cost-effective than delivering discrete interventions separately. That experience suggests that such a package should include both public health measures and essential clinical services and should be made easily accessible to all segments of society, particularly the poor. In identifying the components of such a package, policymakers must identify which interventions are potentially the most cost-effective and recognize that a range of constraints limits how quickly a health system can be reorganized to optimize health outcomes.

Developing an essential package of health care services also allows policymakers to define and demarcate the appropriate roles of public and private sectors in health care. In general terms, the private sector needs to be encouraged to get involved in primary health care delivery.

The results of the burden of disease assessment and the illustration of cost-effectiveness were shared with experts in Nepal familiar with the health care system. Following a brainstorming exercise at a workshop attended by more than 50 policymakers, program managers, technical experts, and representatives of donor agencies held in Kathmandu, August 26 and 27, 1996, the group identified an essential health package for Nepal.

Workshop participants identified 15 health intervention priorities using a scoring system taking 6 critical technical and operational components into consideration.. The priority health care interventions identified were expanded immunization program and promotion of condom use, followed by safe motherhood including family planning, tuberculosis and leprosy control, integrated management of sick child, nutrition supplementation, enrichment, and education, prevention and control of blindness and environmental sanitation etc. This list reveals their preference for interventions that control communicable diseases, improve maternal and child care and combat malnutrition (World Bank, 2000). The participants' choices are consistent with priorities set by Bryant's method in this study.

In the USA, different states formulate their own ways of setting health priorities and establishing objectives. One state, Delaware used a formula to identify its Healthy Delaware 2000 priorities, based on the size of a health problem (A), the seriousness of the problem (B), and the potential for interventions to impact the public's health (C). The seriousness of the health problem was weighted as twice the importance of its size. Planners used several questions to determine the seriousness of a problem. The most effective criterion was the effectiveness of available interventions according to a review of the

scientific literature. To calculate the formula [(A+2B) C], Delaware assigned numeric scores to each defined criteria. Finally, the Governor's Advisory Committee on Public Health categorized health problems as having the "most opportunity," "some opportunity," or "less opportunity" to intervene.

The general health of a people cannot be improved by the application of technologies to passive recipients. Good health must be achieved by and through the activities of people themselves, stimulated, guided and assisted appropriately by those with the relevant technical knowledge and experience. In accepting the essential community base for primary health care it should be emphasized that help will often be needed from central and local governments, the private sector, voluntary and charitable organizations.

In 1991, the Ministry of health promulgated National Health Policy, 1991 (Ministry of Health, 1991). The health policy was made with the objective of bringing up-grade health services to the majority of the population through the extension of basic health services, but there is still lack of effective basic services. According to the 1996 Nepal Living Standard Survey some 41% households mentioned having access to the nearest health facility within a walking distance of half an hour (CBS, 1996).

Also there is a need to point out that the responsibilities of doctors and health professionals are not limited to those who come to hospitals and clinics but expanded to those community people, who may need but do not ask for care (Yang, 1983). The whole community population rather than the individual, is the target of health care service (Kim et al., 1977).

One of the basic health services is safe public drinking water supply.

With safe water supply many of the waterborne diseases can be controlled. Improvements in public drinking water during the twentieth century, including more protected water intakes, filtration, and chemical treatment, virtually eliminated the most deadly water-borne diseases such as typhoid and cholera from the United States (MMWR, 1999). There is also the problem of insufficient drinking water in Kathmandu. At present drinking water requirement is 150 MLD for Kathmandu and Lalitpur but the supply is only one-third of the demand in dry season and two-thirds in other times (MOPE, 2000).

Regarding family planning in Nepali society, religion and the cultural value system is one of the major challenges in the reduction of fertility (Karki, 1998). Couples who view family planning favourably tend to communicate about the number and spacing of their children, and tend to adopt contraceptive methods (Sharan, 2002).

Environmental pollution is a permanent problem. Public awareness and community motivated policing of environment should be the basis of any legislation. To develop environmental health policy without assessing social and economic consequences is impractical (Blumenthal, 1995).

Alcohol and substance abuse including tobacco is also a chronic problem. Alcohol, tobacco, and other drug use prevention specialists, program planners, health education resource centers, and training providers could benefit greatly by determining what parents feel they need to prevent youth involvement in alcohol, tobacco, and other drug use. Prevention and education programs could then be tailored specifically targeting these needs (King et al., 2002).

Health services in all countries of the world, whether developing or developed or whether mainly rural or predominantly urban, have faced

new and complex challenges. Economic growth and development and technological advances, the gap between the rich and poor, which is not diminishing but tending to widen, and changes in moral, social and religious value systems are closely interrelated with the health problems of the people (Ha, 1981, p.5-6).

The method used in this study has its limitations and other methods such as DALY (disability-adjusted life years) can be used to assess the burden of disease in a community perhaps more accurately if the data collected are reliable.

VI. Conclusion

This study set to find out what kind of public health problems need topmost priority in an urban district like Kathmandu, Nepal, and to use efficient, cost-effective, feasible and sustainable interventions to control it.

Therefore a framework to set priorities, Bryant's method was selected because it is simple to use though it may not be the most ideal one. Also it is a method that can be used in the absence of data, but if the data is very reliable, one should use it for reference. Developing countries have difficulties in collecting reliable data due to many factors.

After consulting with professors, textbooks and latest health reports, 15 public health problems of Kathmandu district were selected. Then a questionnaire was constructed with the 4 criteria of prevalence, seriousness of problem, concern of the community, and vulnerability of the problem to management. The severity scale ranged from 1 to 4 plus. The scores were tabulated, and a total priority score for each problem was calculated by multiplying together the scores on each of the 4 criteria. Finally the total priority scores of each evaluation for each problem were averaged to eliminate individual prejudice. Ranking of the health problems was done according to the highest scores. Those problems with the highest total scores are assigned highest priority for solution.

The results showed that highest priority was given to maternal and child health followed by infectious and parasitic diseases, nutritional problems, environmental health problems, tuberculosis, population growth

and STD/HIV and hepatitis B. To attack these primary problems adequate interventions are necessary. Community intervention consists of 3A's: affordability, acceptability and adequacy. Firstly, for maternal and perinatal disorders, Reproductive Health Program including Safe Motherhood is a suitable intervention. The strategies should be to provide essential obstetric services (either comprehensive or basic), and ensure the presence of skilled attendants at deliveries. The community-based maternity care services through FCHVs (female community health volunteer), MCHWs (mother and child health worker), and TBAs (traditional birth attendants) should be strengthened.

Essential health care package for the mother and child can be made most cost-effectively by training birth attendants and nurse midwives, vaccinating all infants, vaccinating all women against tetanus, diagnosing pneumonia and diarrhoea early in children, providing iodized salt, vitamin A and also supplementary feeding to prevent child from protein energy malnutrition.

Secondly, intervention of Curative Services are needed to treat infectious diseases, and intestinal worm infestations can be treated commonly by anti-worm drugs. Curative services are a highly demanded component of health services.

Thirdly, Nutritional Supplementation, Education and Rehabilitation Program intervention is needed. It can prevent PEM (protein energy malnutrition), iodine deficiency disorders, vit.A deficiency, iron deficiency anemia, rickets, perinatal mortality, maternal morbidity, diarrhoeal disease, acute respiratory infections. The strategies should be to create awareness of the importance of growth monitoring to Mother Groups using radio, TV, posters, pamphlets; provide growth monitoring services at hospitals, health posts, sub-health posts and clinics; launch iodized

salt social marketing campaigns; ensure vit. A is administered to children from 6-60 months twice a year; distribute 60 mg. iron folate tabs. to pregnant women; deworm children between 2-5 years by anti-worm drugs; and promote breast feeding.

Fourthly, Environment Sanitation Program intervention can mainly prevent water-borne, air-borne, and food-borne diseases. The strategy should be to increase awareness of communities by dissemination of information to promote the knowledge, attitude and practice.

Fifthly, T.B. Control Program intervention would help to prevent this common and debilitating disease. The best method would be to emphasize on DOTS which is cost-effective and has better cure rates. It is also essential to promote early detection of infectious pulmonary cases by sputum smear examinations.

Sixthly, Family Planning Program intervention can also be integrated to Reproductive Health Program. The strategies should be to expand regular year-round VSC (voluntary surgical contraception) and mobile camp services to hospitals and PHC (primary health care) centers; provide non-clinical methods (condoms, pills, injectables) through static and outreach services; and train health service providers.

Seventhly, STD/HIV and hepatitis B Control Program intervention can prevent the fast spreading capability of these diseases. HIV/AIDS is a pandemic. A range of structural inequalities intersect and combine to shape the character of the HIV/AIDS epidemic everywhere (Parker, 2002). The strategies should be to create awareness through orientation and training of health service workers, supply of educational materials, and hospital services. Prevention of transmission of these diseases can be done through counselling, condom promotion and blood safety precautions.

Lastly, EPI (expanded program on immunization) is a highly cost-effective intervention. It contributes to vaccine-preventable diseases such as tuberculosis, diphtheria, pertussis, tetanus, poliomyelitis and measles in children. The strategies should be to make immunization services easily available in hospitals, health posts, sub-health posts, clinics; and to increase the immunization coverage.

For the success of the interventions there should be political commitment by the government. After setting priorities, like in this study, objectives can be ascertained, and by selecting the target population, adequate interventions should be implemented with short, intermediate and long term priority interventions.

Problems associated with the urban low income group are much complicated than those of rural counterparts as many factors like neighbourhood pollution, overcrowding, unsanitary condition and poor services affect them to much greater much degree.

In the future, the global poor would benefit much more from faster progress against communicable than against noncommunicable conditions, despite the growing prominence of the latter (Gwatkin, 2000, p.25)

Appendix 1. Sample Questionnaire

(For each of the 4 criterion, that is, prevalence, seriousness, community concern, and vulnerability to management, please give a score ranging from 1+ to 4+ depending on the degree of severity of the problem)

Health problems	Preva-lence	Serious-ness	Comm. concern	Vul. t o mg.	Total
Maternal and perinatal disorders					
Tuberculosis					
Population growth					
Environmental health problems*					
Oral health problems					
Mental health problems					
STD/HIV and hepatitis B					
Infectious and parasitic diseases**					
Injuries/accidents					
Eye/ear problems					
Cancers					
Chronic respiratory diseases					
Cadiovascular diseases					
Nutritional problems					
Alcohol and substance abuse (plus tobacco)					

* Environmental health problems refer to diseases caused by toxic agents in air, water, soil and food

** Infectious and parasitic diseases refer to acute respiratory infections, diarrhoea, dysentery, diphtheria, pertussis, tetanus, polio, measles, meningitis, typhoid fevers, hepatitis, rabies, leprosy, malaria, encephalitis, leishmaniasis, cholera, skin infections, worm infestations etc.

Appendix 2.
Kathmandu District: (fiscal year 1999/2000)
Health Management Information System
Dept. of Health Services
HMG, NEPAL

Target population and health facilities:

--Ecological region: Hill
--Total population: 914,326
--Expanded program of immunization
<1yr. Population: 19,765
--Ac. respiratory infections/Control of diarrhoeal diseases
<5yrs. population: 95,115
--Nutrition (0-36 months children): 55,449
--Tetanus toxoid (15-44 yrs.): 221,955
--Family planning/MWRA (married women of reproductive age)
(15-49yrs.): 167,431
--Expected pregnancies: 36,503

Health Facilities:

--Hospitals (Govt.): 4
--Primary Health Care Centers (PHCC): 6
--Health Posts (HP): 6
--Sub-Health Posts (SHP): 54
--Total health institutions: 70
--Primary Health Care (PHC) outreach clinic: 199

Nutrition data:

--Proportion of malnourished children (wt./age)
<3yrs. children: 17.9%

--Treated by vitamin A coverage: 2.6%
--Iron tab. distribution coverage (expected pregnancies): 13%

EPI coverage:

--BCG: 143.5%
--DPT3: 114.3%
--Polio3: 114.4%
--Measles: 113.9%
--TT2: 6.4%

Family planning:

--Temporary method current users: 83,614
--Current VSC users: 43,949
--Total users of all methods: 127,563
--VSC (voluntary surgical contraception) CPR: 26.25%
--CPR: 76.19%

Safe Motherhood:

--ANC first visits as a % of expected pregnancies: 24.6%
--Average no. of ANC visits per case: 2.0
--Total no. of deliveries conducted by trained persons: 15, 125
--PNC first visits as a % of expected pregnancies: 2.0%

   (ANC= antenatal care; PNC= postnatal care)

Tuberculosis:

--Total patients: 2,416
--Prevalence rate: 2.64 per 1000 persons

Acute respiratory infection:

--Incidence of ARI per 1000 <5yrs. population: 76

Control of diarrhoeal diseases:

--Incidence of diarrhoea per 1000 <5yrs. population: 92
--Diarrhoeal deaths per 1000 <5yrs. population: 0.01

National major health indicators: The World Bank 2000

--Infant mortality rate: 77
--Under 5 mortality rate: 107
--Total fertility rate: 4.4
--Expectation of life at birth: 58
--Maternal mortality ratio: 540
--CPR (contraceptive prevalence rate): 29

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국 문 요 약

"네팔 카트만두"지역에서 주요 건강문제 규명과 이를
개선하기 위한 적절한 프로그램 제공방안에 대한 연구"

이 연구의 목적은 "Bryant's Method of Setting Priorities"를 이용하여 "네팔 카트만두" 지역에서 주요건강 문제들을 규명하고, 이를 개선하기 위한 효율적이고 비용효과적이며, 실행성과 지속성이 있는 적절한 프로그램 (intervention)을 적용하므로 이환율(morbidity)과 사망률(mortality)감소시킴에 있다.

이 연구는 26명의 네팔 공중보건종사자와 6명의 한국보건관련전문가들이 참여한 "Bryant's Method of Setting Priorities"를 기본으로 이용되었다.

카트만두 지역은 네팔의 중심 산악지역에 위치해 있으며, 인구는 914,326명으로 이루어진 지역이다. 이 지역은 네팔의 다른 지역들보다도 많은 자원이 소모되는 도시지역이지만 빈민인구의 증가로 기본건강관리의 필요성이 증가되고 있다.

본 연구에서는 건강관련 문제들을 중요성을 기준으로 서열로 나타내면 첫째로 모성과 주산기관련 질환(maternal and perinatal disorders), 둘째로 전염과 기생충관련 질병(infectious and parasitic diseases), 셋째 영양관련 문제(nutritional problems), 넷째 환경건강문제(environmental health problems), 다섯째, 결핵(tuberculosis), 여섯째, 인구증가문제(population growth), 마지막으로 성병/에이즈 및 B형 간염(STD/HIV and hepatitis B) 등으로 조사되었다.

위에서 언급된 이러한 모든 건강문제들은 기초적으로 중요한 건강관련 문제로 고려될 수 있으며, 적절한 프로그램을 설정하여 적용하여야만 한다.

　　주요 적용될 수 있는 프로그램으로는 오성건(reproductive health), 의료서비스(curative health services), 예방접종 프로그램(expanded program on immunization), 풍부한 영양공급(nutritional supplementation, enrichment), 보건 교육과 재활(education and rehabilitation), 환경위생 (environmental sanitation), 결핵 관리 (tuberculosis control), 가족계획 (family planning), 성병 및 에이즈관리 프로그램(STD/HIV control) 등이 있다.