

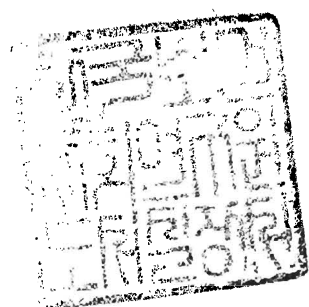
FERTILITY CONTROL EXPERIENCES IN THE REPUBLICS OF KOREA AND CHINA

**Proceedings of the Third Workshop on Comparative Study
of Population and Family Planning in ROK and ROC
July 9 -17, 1991, Taiwan, Republic of China**

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FOREWORDS

Professionals in population and family planning research in the Republic of Korea and the Republic of China have been sharing their research findings under the auspices of the Korea Institute for Health and Social Affairs (KIHASA) and the Maternal and Child Health Association of the Republic of China (MCHA) since October 1985 when a technical cooperation agreement was signed between institutions of the two countries. Ever since, in addition to the regular visits, two workshops on the comparative study of fertility control experiences have been organized, the first one in November 1986 in Korea, and the second one in June 1989 in Korea again. The present workshop was the third one which was held on 9-17 July 1991 in Taiwan, the Republic of China. This workshop focussed on the following subjects:

1. recent changes in the national family planning program and its future directions;
2. policy implications of family planning integration;
3. health and living status of the elderly population;
4. changes in marriage, household and family structure; and
5. impact of the family planning program on population quality.

To minimize the interference of routine administrative work for higher concentration, a large part of the workshop was held in a rural resort, the Snow Mountain Garden Farm, a recreation center approximately 40 km into the mountain away from the City of Taichung.

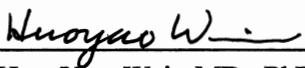
The workshop was attended by 35 participants of both Korea and Taiwan, and co-chaired by Dr Ehn-Hyun Choe, Vice President, Korea Institute for Health and Social Affairs, and Dr Ming-Cheng Chang, Director, the Taiwan Provincial Institute of Family Planning.

It was tentatively decided at the final session of the workshop that the


fourth workshop would be held in Korea in June 1993. Topics for discussion would be decided at a later date.

We would wish to thank the participants for their contributions to the workshop. Our thanks are also due to Mr Jeff Tsai, Director, Office of International Cooperation, Department of Health of the Executive Yuan, Republic of China, for editing the manuscripts, and also to the Maternal and Child Health Association of the Republic of China for printing the Proceedings. Finally, we should like to thank the numerous persons involved in the planning and conducting of the workshop. Without their contributions, the workshop would have never been such a success.

We note with regret that two papers, Policy Implications of Family Planning Integration with Comprehensive Health Program in the ROC, by M.S. Lai and C.T. Soong of Taiwan, and Population Aging and the Health and Living Status of the Elderly Population in Taiwan, by H.S. Lin of Taiwan, were not available at the time of printing. They will be printed as supplements in the future.


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INTRODUCTION

*Jeff Tsai**

The idea to "compare notes" between researchers in population and family planning of the Republic of Korea and the Republic of China came out as a result of an agreement signed in October 1985 between the then Korea Institute for Population and Health (now Korea Institute for Health and Social Affairs) and the then Chinese Center for International Training in Family Planning (terminated in 1989). Both parties believed, and still believe, that both Korea and Taiwan have many in common in the management of family planning programs, in the promotion of contraceptive practices, in the reduction of fertility, and in the process of demographic transition, and that the experiences of both countries in these areas will be mutually beneficial through regular workshops to compare notes. They also believe that this process of comparing notes is not only mutually beneficial, one learns from the experience of others to improve his/her work, it is also considered beneficial to a fairly large extent to the international community as well. Therefore, three such workshops have been organized to date, and proceedings of each workshop have been edited and distributed to individuals and agencies concerned throughout the world for their reference.

The holding of the third workshop in July 1991 was considered by all most timely as both Korea and Taiwan have already reached the replacement level of fertility and new directions for future family planning program management would have to be deliberated and recommendations made to each respective government for decision making. There was a consensus of the participants that now that the rapid growth of population has been brought under control and the process of demographic transition has been completed, the conventional approaches to family planning implementation focusing primarily and heavily on

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the quantitative reduction of fertility may have to be shifted to the improvement of the quality of population, and the "fire-fighting" approach to concentrate all available resources on the implementation of family planning program with a hope to have the maximum gain in the shortest possible duration of time may have to be relaxed. It was the general feeling of the participants that family planning should no longer be seen in the context of reducing the number of births alone, it should be viewed as a part of the welfare of the individuals and families as well. Thus, the idea of integration was brought up and discussed.

Herewith are some of the highlights of the papers presented and the discussions that followed.

Changes in Program Directions

Changes in program directions have been taking place both in Korea and in Taiwan now that the fertility has reached the replacement level in both countries. Generally speaking, both programs have been shifting from quantity-oriented approaches aiming at reducing fertility to quality-oriented programs for the improvement of the quality of population. As such, funds, resources and support generously available in the past to family planning programs have been reduced to varied extents in both Korea and Taiwan as more and more administrators are of the opinion that problems related to rapid population growth have been "solved" and family planning should no longer receive high priority. Both programs, however, argue that though the demographic goals have been attained, there are other aspects of family planning that have to be attended to with if not more, equal effort. The improvement of the quality of population, for instance, is as important as the recruitment of contraceptive acceptors.

In Korea, the most strongly promoted strategy for sterilization acceptance and the most advocated norm of one-child family have somewhat been relaxed. Approaches have been taken to reach young unmarried people through marriage counseling, family life education and sex education to prevent pre-marital sex and adolescent pregnancies. Qualitative aspects of the program are now more emphasized than the quantitative aspects hoping to reduce unnecessary induced

abortions and to maintain a low fertility level and to postpone the realization of zero population growth rate to a much later date.

In Taiwan, a "New Family Planning Program" began in July 1990 to encourage people to practice family planning and to accept services of genetic health with a hope to keep population growing at a reasonable rate, to reduce the occurrence of congenital deformities, to make available family planning services to disabled individuals and members of low-income families, to improve the general happiness of families and to upgrade the quality of population.

Both programs though differ in technical details, are similar in their general directions such as:

1. Now that almost all married women in the reproductive ages are practicing contraception, there is very little pool of potential acceptors to recruit from, the recruitment of as many acceptors is no longer a concern. Targets for acceptance though are still set, they are not enforced but rather used as a guideline for the evaluation of the program. Both programs, instead, are trying to improve the quality of services to encourage acceptors to stay on methods as long as possible and to seek ways to reach young and unmarried people who generally are not covered in the target groups of conventional family planning programs. Services are now made more available to disabled persons, members of low-income families and even to infertile couples to help them have the number of children they desire.

2. Instead of sterilizations as in the past, more effective temporary and reversible methods are now promoted. Spacing of births rather than birth termination is encouraged.

3. Family planning workers will be made more to work in comprehensive primary health care than family planning alone. If a worker is to visit a family, with proper training, she might as well look after the health of every member of the family, particularly the elderly ones. Family planning as a program will focus more on the social welfare goals.

4. A two-child family rather than a one-child family norm will be advocated to allow population to grow at a reasonable rate. Disincentives against large families and incentives for small families have been lifted. However, no explicit policy as such to reverse the trend of fertility decline has been adopted by either country. Though a general feeling of a fertility level of 2 seems to be considered desirable, this has not become a policy yet.

5. Measures will be taken to improve the quality of population through improved MCH program or genetic health program to prevent congenital deformities.

6. Sex or family life education in schools will be strengthened to help the young generations develop more positive attitudes toward sex, marriage, reproduction and family. The value of family will be stressed. The general attitude of the younger generations to stay single, to marry late if marry at all, and to have fewer children will be changed through education. Education of young people outside schools will also be strengthened.

7. Realizing that the population is aging relatively rapidly in both countries as a result of fertility decline, programs for the care of the elderly will be planned in advance. In particular, under the present circumstances that family structures are changing and that many married children are no longer living with their parents, the care of the aged has become more urgent.

With regards to sex education in schools, it was felt by the group that sex as a subject, like life science, should be taught in schools, for sex, like knowledge of computer, is a basic knowledge that each person of modern society should have and be concerned with. However, to expect the teaching of sex in schools to solve all problems related to pre-marital sex and adolescent pregnancy would be too naive. Young sex is no less prevalent in countries where sex is taught in schools. The problem of adolescent sex may require different approaches. In fact, adolescent sex has two aspects: sexual behavior of the young and adolescent pregnancy as a result. It may not be possible, under the present circumstances, to prevent the young from having sex. It is more the responsibility of the family planning program to help young people from not becoming pregnant in the first

place, and once pregnant, to help them sort out the problems associated with pre-marital pregnancy.

Quantity vs. Quality

The quantity-oriented family planning programs in the past decades have been instrumental in bringing down the population growth rate from 3% or so in the early 1960s to the current 1% and the total fertility from 5-6 to only 1.7 in the same period in both Korea and Taiwan, a fact observed by C.N. Cho and M. H. Seo of Korea and C.M. Chang of Taiwan in their papers on recent changes in the family planning program and its future directions. Both papers are in agreement that now that the fertility has reached replacement level in both countries, a further decline in fertility may not be desirable as such decline may bring about a drastic change to the age structure of the population with more elderly persons and fewer persons of productive ages in the population. They are of the opinion that either the current level of fertility is to be maintained or, if possible and practicable, the fertility should be brought back to around the level of 2 to postpone the realization of zero growth of population to a much later date. They also emphasize that now that the quantity of population is no longer a major concern, concern should be placed more on the improvement of the quality of population.

Quality refers to the quality of services and the quality of population. In the future, knowing that there will still be large demands for contraceptive services, safe and effective contraceptives should be made more available and accessible through efficient delivery systems to meet the demands of the public. In addition, services should also be made available to the disabled minority groups and to the infertile couples as well. Follow-up of acceptors to minimize adverse side effects of methods and to improve the continuing use of methods is another area of concern.

The quality of population is a most evasive and ambiguous concept, says S. Y. Lee of Korea in his paper on the impact of family planning program on population quality. He, however, argues that the practice of family planning has positive impacts on fertility, birth intervals and the practice of induced abortion,

and therefore, has improved the general health of mothers and children, which is one aspect of the quality of population. Also, with fewer number of children in a family, parents' capability of investing on their children increases as the overall income level increases, and the chances of children's future attainments in human capitals such as education, vocational skills and other types of qualifications also increase. These human capitals determine the quality of population in the next generations.

Under normal circumstances without family planning as an intervention , a "reverse check of population" is expected to persist in a society. Members of the affluent classes very often have more access to contraception information and services, they tend to limit their number of children. Whereas people of lower socio-economic classes tend to have more than enough children. Family planning program, as stated by C.M. Chang of Taiwan in his paper on the same subject, by lowering market costs by way of increasing information through home visits, group meetings and use of mass media, and by way of providing low-cost contraceptives at public and private clinics easily accessible to the general public, has made contraception a common practice regardless of socio-economic statuses and thus prevented the reverse check of population, which if left uncontrolled, would have adverse effects on the general quality of population.

Genetic health services, however, were little mentioned in the discussion. A Genetic Health Law was promulgated in Taiwan in 1985. Ever since, programs for pre-marital health examination, pre-natal genetic counselings, amniocentesis for genetic diagnosis, and screenings of the newborns for metabolic disorders have been promoted in Taiwan hoping to prevent congenital deformities in advance, and to take remedial measures when the foetus is diagnosed to be deformed or when the newborn is found disordered. These practices aim at improving the biological quality of population through preventive and remedial measures hoping to reach the goal of "every child born is wanted and healthy".

The Issue of Integration

Those who are in favor of integration, and particularly integrating family planning program with maternal and child health program, argue that: (1) now

that the practice of contraception is universal, with or without family planning program, people will make all efforts to regulate their fertility anyway, the heavy investments in family planning program both in terms of capital and manpower are no longer justified; (2) a further decline in fertility is not desirable, the current fertility level should be maintained; and (3) child-bearing is essentially a part of MCH program, family planning in terms of the regulation of family size should be looked at as an effort to improve the general welfare of the family as a whole.

Integration is not new. Taiwan started its family planning program as a part of the MCH program under the disguise of pre-pregnancy health (PPH) at a time when the social climate was antagonistic to family planning. JOICFP of Japan initiated a pilot project of family planning-parasite control integration in Nantou County of Taiwan Province in early 1970s. JOICFP, again, supported a family planning-nutrition-parasite control integration project in Korea in 1977. The philosophy behind these projects was not necessarily one of integration. It was Mr Kunii's belief that through parasite control or nutrition improvement, people see the immediate advantages of health care intervention such as deworming, will consequently develop more confidence on health care workers, and therefore, will more willingly accept family planning or any health programs advocated by the health care workers. In other words, parasite control is not integrated with family planning program in a strict sense, it is rather used as a means to encourage more practice of family planning.

The arguments of the pro-integration groups are understandable and well taken. The question is, after 25 years of independent operation, is integration really a good idea, is it practicable, what will family planning program gain by integration, what will it lose by not integrating, and what will MCH program, assuming family planning is to be integrated with MCH program, gain or lose by integration? Historically, family planning started as an independent program under an emergency situation to "fight against the fire". Now that the "fire" is ceasing, some changes in the conventional family planning program approaches are quite called for. The question is: is integration the answer and only answer ?

M.S. Hong of Korea is all for multipurpose health workers than uni-

purpose ones, a health worker (in this case, a nurse) working for family planning, MCH and tuberculosis control at one time in a community. His argument is that a client is less bothered by the repeated visits of different workers on different problems at different times, and all her health problems can be solved by one worker at one time. In fact, Korean government has attempted the integration of family planning and MCH several times, and the two programs have, in fact, been integrated at the organizational level, though at the service delivery level in the field, integration is not effectively made in spite of the considerable efforts made to the program by the government, says M.S. Hong in his paper on the policy implication of family planning integration with maternal and child health program in Korea. Some lessons learned from a pilot project on family planning/MCH integration in Soesan County of Korea are also mentioned in his paper.

Taiwan's experience in integration is a different one. For the last three years, a project has been carried out in the Province of Taiwan on trial basis for family planning workers, MCH workers and tuberculosis control workers, in addition to their respective regular functions, to screen on home visitings all adults above the age of 40 years in a family for hypertension and diabetes. Suspected cases are referred to for further examination and treatment if so required. Cases are placed under management and normal individuals are educated in the prevention and control of these diseases. The underline philosophy, again, is if a worker is to visit a home, she might as well look after the health of every member of the family at one time. This concept is, in a sense, integration at the functional level.

The issue of integration came up in the recent years most likely because administrators were of the impression that problems associated with rapid population growth had been solved and that there was very little work for family planning workers to do any more. Malaria was a serious health problem in Taiwan in the 1940s. A Malaria Research Institute was created for the full-time control of malaria. In 1965, the World Health Organization officially declared that Taiwan was free of malaria. Mission being completed, the Institute was soon later abolished. The impression of administrators is true as far as the attainment of demographic goals is concerned. Now that as many as 80% of women of

reproductive ages are practicing contraception, there are very few potential acceptors for recruitment. Yet, the questions are, are the attainment of demographic goals and the provision of contraceptive services the only functions of family planning program, and are there other functions that family planning program should render, if the goal of family planning is to improve the general welfare of families, and yet has not rendered ? These include: genetic health services, the screening of the elderly for chronic diseases, socialization of children under the changing family structure, sex or family life education in schools, the prevention of adolescent pregnancy, and even the prevention of AIDS. Perhaps, there is still more than enough work for family planning to function independently as a program.

The Changing Family Structure

In both Korea and Taiwan, young people stay single for a longer duration, marry late if they marry at all, marry themselves without prior consultation to their parents, live alone away from their parents and married brothers, and many terminate soon their marriages by divorce. This is the trend since 1960 as observed by K.W. Cheong of Korea and L. Chi of Taiwan. The changes in the marriage patterns and family structures that have been taking place in both Korea and Taiwan will eventually bring about a series of health related problems, the socialization of children, the health care of the elderly, to mention a few.

People marry late and reproduce few. There is very often only one or at most two children in a family. Both parents are working, grandparents are often not around, the contact between children and adults is, therefore, limited. There are no brothers nor sisters, and the agents through which children learn about behaviors and social norms for personality development are limited. Parents tend to spend more money on children to make up and to ease their feeling of guilty for not caring enough of their children. Children become spoiled, demanding, selfish and ego-centered. The good old days of families with six or more children in which children learn from each other by respecting the needs of others will never return. Realizing that this trend of change will continue, it is imperative that a new set of child rearing and development be developed to help the

socialization of the younger generations.

In view of the increasing rate of divorce in both countries, the care and socialization of children of broken families and one-parent families also deserve serious consideration. In the process of socialization, children need various models for imitation and identification. If only one model is available around, they will have to turn to TV programs and peer groups for identification, their personality development may be hampered.

Care of the Elderly

Both populations in Korea and Taiwan are aging as a consequence of fertility decline. The population above the age of 65 years will be 12.5% and 13.7% of the total population in Korea and Taiwan respectively in the year 2020 as projected by M.K. Suh of Korea and H.S. Lin of Taiwan. These old people, very large in number, will have to be provided for financially, supported emotionally and cared for when sick as they often are.

People now live longer. They are expected to live even longer when the health conditions are further improved. But longer life expectancy alone is meaningless unless people also live in good health and dignity in their old ages. Dignity means self-sustain and self-respect. In countries such as Korea and Taiwan where social security programs are weak and old-age pensions are available only to certain groups of the population, the retired government employees for instance, old people can hardly live in dignity as far as their financial condition is concerned. They very often have to rely on the "mercy" of their children for some petit pocket money. And pocket money, though a very trivial matter it may seem to be, is observed to affect the elderly's mental well-being, an interesting point made by M.K. Suh of Korea in her paper entitled Health and Living Status of the Elderly Population in Korea. To financially, and emotionally as well, perhaps, support the elderly and for the "recycling" of the old-age manpower, some kind of job-placement and re-employment system for retired people should be developed along with the social security and pension systems. The practice in Korea to encourage people to support their elderly dependents by reduction or exemption of inheritance tax and income tax, a small

amount of government monthly allowance and a larger sum of housing loans is worth promoting.

Living arrangement is another issue. The fact is many married sons are now living away from their old parents for many reasons. The proportion of the elderly living by themselves had increased from 22.6% in 1985 to 24.7% in 1988 in Korea, and from 12% in 1986 to 14% in 1988 in Taiwan. For parents to live with their married children will become more and more difficult as urbanization progresses simply because there is little room for additional persons in a small apartment in the city. And yet, many studies have pointed out that the support of kins and friends is instrumental to the mental and even physical well-beings of the elderly. Nursing homes for the elderly can never substitute for the kind of support kins and friends can provide. Still, the housing problems of the elderly will have to be solved one way or the other.

Health promotion of the elderly is most important as far as health care is concerned. To live long itself is without meaning unless one also lives in good health. Aging is an eventual biological process, and chronic diseases are common among aged people. This process, however, can be slowed down by health promotion. Old people do not have to be sick and fragile if they know how to protect and maintain their health. In fact, not every old person is sick. A majority of the elderly, as reported by M.K. Suh of Korea, appear to be able to accomplish all IADL (instrumental activities of daily living, that is, eating, dressing, care for one's appearance, walking, getting in and out of bed, shopping and handling one's own money, etc.) The concept of "compression of morbidity" maintains that one does not have to be sick throughout his old age and extinguishes gradually as candle fire; one can stay relatively healthy until the day he dies if one knows and practices ways to prevent diseases and promote health. Health and diseases are rather behavior-oriented. Some changes in one's behavior could bring about significant improvement in his health. And yet, in a survey in 1988 in Taiwan, it was found that around one-third of the elderly surveyed smoked, one-fifth of them drank, 40% had no regular exercise, 33% took high-salt foods and 27% took high-cholesterol foods. Any change of one of these risk factors could significantly improve the health of the elderly.

With the national health insurance program now in operation in Korea and soon to be implemented fully in Taiwan, the medical care of the sick aged is expected to improve and become more available. However, the diseases of the aged are often chronic in nature, long-term hospital care is not necessary and not desirable either, home health care of the chronically ill patients will eventually become important. This is an area which both Korea and Taiwan are still developing.

Some Closing Remarks

The Workshop was intended to serve as an opportunity for the exchange of ideas and research findings. No consensus was called for. There, however, were some common feelings on certain issues:

1. Though it was the consensus of the group that family planning should continue to be promoted with more emphasis on the health and welfare of individuals and families, there was a general feeling that the intensive implementation of family planning program should be somewhat relaxed, and may even reversed to encourage more births.

2. New directions for the program should be developed soon focusing more on the quality of services and quality of population. It would seem more desirable if a total fertility level of 2 could be maintained. The realization of the zero growth rate of population should, if possible, be postponed to a much later date.

3. The idea of integration was discussed though no consensus was reached. There were still doubts as to whether integration was a good idea at all, and if so, whether for family planning to integrate with MCH program or other programs.

4. The population is aging, and the family structures are changing. To cope with these changes, programs should be planned ahead in advance.

The group was taken to field visits of various health and medical care activities in Taiwan on 13 July.

Chapter 1. FUTURE DIRECTIONS

RECENT CHANGES IN THE POPULATION CONTROL POLICY AND ITS
FUTURE DIRECTIONS IN KOREA.

.....*Nam-Hoon Cho and Moon-Hee Seo*

RECENT CHANGES IN THE NATIONAL FAMILY PLANNING PROGRAM
AND ITS FUTURE DIRECTIONS IN THE ROC.

.....*Ming-Cheng Chang*

RECENT CHANGES IN THE POPULATION CONTROL POLICY AND ITS FUTURE DIRECTIONS IN KOREA

Nam-Hoon Cho and Moon-Hee Seo***

I. INTRODUCTION

Korea's national family planning program evolved primarily in response to the high population growth of the late 1950s. It has been an integral part of a series of Five-Year Economic and Social Development Plans since 1962. From the initial stage, the program has been with government support using large corps of family planning field workers to motivate clients through home visits, along with private physicians to provide free contraceptive services. This strategy of using these diligent and cooperative field workers and physicians is fruitful and has been effective, particularly in rural areas.

In the 1970s, new issues in family planning emerged with post 1962 socio-economic development. An increasing number of rural population began to migrate to urban areas, and as a result, more emphasis had to be given to family planning services for urban population, particularly for low-income groups and industrial-site workers.

In 1981, when the Fifth Five-Year Economic and Social Development Plan (1982-1986) was drawn up, the government took into serious consideration the future population growth rate which would seriously threaten to defeat its efforts toward national socio-economic development unless the existing population control policy measures were further strengthened. The government, thus, devised forty-nine innovative policy measures including revitalizing existing family planning programs, the development of extensive social support policies for small family norms, and close interministerial coordination and cooperation for family

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planning programs.

With the continuous successful implementation of the family planning program beginning in 1962, the contraceptive practice rate of married women aged 15 to 44 had increased to a high level of 77.1 percent by 1988 while the total fertility rate had declined to below the replacement fertility level of 1.6 in 1987.¹⁾ According to the new population projection which has been set assuming that the current fertility level will be maintained, the nation's population will increase from 42.9 million in 1990 to 50.6 million in 2021, and thereafter the population is expected to decrease gradually in its absolute numbers (see Appendixes 1-3).

In setting up a future population policy, it should, therefore, be borne in mind that there are two opposing views on future policy in Korea. The first viewpoint has to do with the fact that the current population control policy has to be maintained at all costs in view of the following unfavourable socio-economic conditions: Korea's cultivable land and other natural resources are limited, there is a relatively low public health standard level, there is a seriously unequal income distribution, and the labor market segmentation is poor. The second viewpoint asserts that if the nation's population reaches the zero population growth level too soon, Korea will inevitably face a rapid population aging problem including the shortage of a young economically active population, so the realization of a zero population growth rate should be postponed as long as possible.

Since these views on future policy directions are considered realistic for Korea, this paper will discuss views that would be appropriate for future population policy and program directions for Korea after taking into consideration population growth and problems as well as recent changes in population policy and programs.

1) National Statistical Office (NSO), Results of 1990 Population Census and New Population Projections, 1991

II. FUTURE POPULATION GROWTH AND PROBLEMS

A. Future Population Growth

With an effective and efficient family planning program launched in 1962, the total fertility rate was brought down from a high 6.0 per woman in 1960 to below the replacement level of 1.6 per woman in 1987. The population of Korea would increase from 42.9 million in 1990 to 50.6 million in 2021 if this trend continued and then there would be negative growth. Growth rates were 0.93 percent in 1990, would be 0.79 percent in 2000 and zero percent in 2021. Consequently, the population will age; and the percentage of the 0-14 age group would go down from 26 in 1990 to 16 in 2021, while the corresponding percentage of population aged 65 and over would increase from 5 to 13. If the trend continues, Korea will soon face population aging problems (see Appendixes 1-3)

Fortunately, the economically active population, aged 15-64 years, will rise from 69 percent of the total population in 1990 to 71 percent in 2021, but this high proportion, which will reduce the dependency ratio, will decrease when the population ages rapidly as shown by the Japanese population. For example, in Japan in 2020, the economically active population will account for about 60 percent of the total, the 0-14 age group will be 16 percent and the over 64 age group will be 24 percent²⁾ of the total. The relative young age structure of Korea's population is also shown by the median age of the population: 29 years in 1989 compared with 35 for the United States, 36 for Japan, and 30 for West Germany (see Appendix 4).

Since the 1980s, the sex ratio (males/females) at birth has been on the increase, 107 in 1982 and 114 in 1988. This increase is even greater for the

2) Kono, Shigemi (1989), "Population Structure", Population Bulletin of the United Nations, No. 29, pp.108-124

third and fourth births, from 109 in 1982 to 171 in 1988 for the third birth, and from 114 in 1981 to 199 in 1988 for the fourth birth. This is attributed to the fact that sex selection procedures were used by a large number of parents. This trend may stop with the introduction of a revised law on medical services in 1986 in which the identification of the sex of an unborn child is strictly forbidden except under limited circumstances. The existing social prejudice for one gender against the other could be eradicated by the revised family law emphasizing female rights and improved female education (see Table 1).

Table 1. Sex Ratio (Males/Females) at Birth by Parity. 1982-1988

Parity	1982	1983	1984	1985	1986	1987	1988
Total	106.9	107.7	108.7	110.0	112.3	109.4	113.6
First	105.5	106.0	106.4	106.3	107.6	105.2	107.2
Second	106.1	106.3	107.5	108.2	111.7	109.5	113.5
Third	109.3	112.5	118.5	131.7	141.4	131.8	170.5
Fourth or more	114.2	122.1	131.7	153.8	157.4	157.2	199.1

Source : Bureau of Statistics, EPB., Recent Changes in Vital Statistics and New Population Projection, 1988.

Korea has undergone unprecedentedly rapid urbanization since the 1960s. In 1985, about 44 percent of the population was found in four large cities: Seoul, Pusan, Taegu and Incheon. The urban population growth rate was most rapid in the 1960s: at 6.0 percent per year during the 1960-66 period and at 7.2 percent per year during the 1966-70 period. In the 1970s, it declined somewhat and during the 1980-85 period, the growth rate went down to 4.3 percent per year. It is expected, however, to go down further to 2.3 percent per year in the 1985-90 period, to 2.0 percent in the 1990-95 period and to 1.6 percent in the 1995-2000 period. In particular, Seoul's population growth rate will go down from a high of 9.8 percent per year in the 1966-70 period. It still accounted for one quarter of the nation's total population in 1990 (10.7 million) and will be about 27 percent of the total population in 2000.

As the urban growth rate is much higher than the national population growth rate, the urban-ward population movement will continue, there is a need to take appropriate measures to deal with the socio-economic problems arising from urban population concentration and growth.

B. Socio-Economic Problems³⁾

By the year 2000, the nation's population is expected to have increased to 46.8 million or a 15 percent increase over the 1985 population. Concomitant with the population increase, there will be changes in the patterns of consumption, employment, housing, transportation, and a rapid nucleation of the family resulting from the unprecedented industrialization and modernization process.

The total number of households increased from 4.38 million in 1960 to 9.59 million in 1985, an annual increase rate of 3.2 percent over the 25 year period. This increase rate is much higher than the annual population increase rate, 2.0 percent per year, over this period. The rapid increase in the number of households is attributed mainly to family nucleation. In 2000, the housing problem will become more serious as it is increasingly difficult for the supply of housing to meet demand since the household growth rate will far surpass the population increase rate.

In addition, the nation's cultivable area decreased from 2.20 million hectares in 1980 to 2.14 million hectares in 1990, and is expected to further decrease to 2.10 million hectares in 2000. This will reduce agricultural output and create food grain shortage problems. It is estimated that by the year 2000 the nation will have to depend on imports for 65.8 percent of its food grains. In 1970, the nation was 84.6 percent self-sufficient in filling its annual food grain demand. This decreased to 61.2 percent in 1980, and further to 42.0 percent in 1990.

3) Nam-Hoon Cho, et al., Recent Changes in the Korean Population Control Policy and Its Future Perspectives, KIPH, 1989

The nation's energy demand is likely to increase during the 1986-91 period by 6.1 percent per year , and after that period , demand increase may slow down due to industry restructuring and technological development. During the 1987-2000 period, the growth rate will decrease to annual 4.8 percent level. In 1986, 76 percent of the energy demand was met by imports from abroad, but in 2000, over 90 percent will have to be met by imports, thus creating a serious depletion in the nation's foreign currency reserves.

In the public health field , a World Bank Survey based on the data from 124 countries (1986) shows that infant mortality increased by 15.4 unit per unit increase in the annual population growth, and the per unit increase in annual population growth was accompanied by a 3.4 year decrease in life expectancy, and a 146.7 calorie decrease in the per capita daily calorie supply. The World Bank report also indicates that the unit increase in the total fertility rate was accompanied by 1.5 unit increase in the crude death rate, and 21.0 unit increase in the infant and childhood mortality rate, as well as by a decrease of 192 calories in the per capita daily calorie supply.

In general, as the fertility level decreases, life expectancy increases and the public health standard usually improves, but the fertility decline is also inevitably accompanied by population aging, an increase in medical costs for the aged due to an increase in the population suffering from chronic diseases. In 1985, about 5.7 percent of urban household income and 5.2 percent of rural household income were spent on medical expenses, but the proportion spent on medical costs is expected to increase in 2000 to 9.0 percent in urban households and to 7.3 percent in rural households. As population aging continues, medical expenses will soon account for over 10 percent of total household expenses.

According to government statistics, the unemployment rate decreased from 3.1 percent in 1987 to 2.5 percent in 1988, but a series of past labor disputes and demands for wage increases produced negative effects on the nation's competitive power in the world trade. The future unemployment problem is likely to worsen due to industrial automation, and also to the increasing number

of aged and females who want to participate in economic activities.

III . RECENT DEVELOPMENT OF INTEGRATED FAMILY PLANNING AND HEALTH SYSTEM⁴⁾

Korea's family planning program has been carried out as part of the population control policy through government health centers since 1962. In 1962, the government established family planning sections in its 183 health centers throughout the country, and allotted nurses and midwives as family planning workers to individual health centers. Gradually, family planning workers were allocated to health subcenters in township areas to provide family planning services and conduct family planning IEC activities.

In the 1960s, eighty percent of the nation's population was in rural areas, and the family planning workers' main task was to make home visits to motivate and recruit contraceptive acceptors. Starting in 1967, each health center or health subcenter was staffed with a family planning (FP) worker, a maternal and child health (MCH) worker, and a tuberculosis (TB) worker.

Unlike some countries where family planning program is included or integrated into maternal and child health care program, Korea places a greater emphasis on family planning program as a part of the nation's population control policy than on the maternal and child health care program. This is one of the reasons family planning workers were assigned to the health centers far in advance of the maternal and child health care workers and the tuberculosis workers.

Starting with the Fourth Five-Year Economic Development Plan (1977-1981), however, the government's development program included not only public and medical health matters but also social concerns. It also began to recognize

4) Eung-Suk Kim, et al., Directions for Improvement of the Operation and Management Systems of the National FP Program, KIHASA, Dec. 1990

the need for integrating the functions of family planning workers, maternal and child health care workers, and tuberculosis workers into those of single multi-purpose public health workers.

In 1981, the status of the above three workers was upgraded from temporary position to a permanent public servant known as health worker. In the 1980s, however, there were many problems in transforming the 2,461 FP workers, the 916 MCH care workers, and the 2,101 TB workers into single integrated multi-purpose health workers. Three of the main problems were: 1) about 81 percent of these workers were nurse-aids whose qualifications as well-trained public health worker were in doubt; 2) in order for the integration program to be carried out properly, the organization of and management from the central government level down to the lowest health subcenters had not been fully instituted; and 3) a specific training program designed to integrate the existing three separate workers into a single multi-purpose health worker had not been developed.

Despite the ambitious integration program announced in 1981, therefore the program could not take off until July 1985 when the practical integration program was put into effect at the health center and health sub-center level but without the reorganization of the existing management structure.

Korea could maintain an annual economic growth rate of over 8 percent, with and part the successful implementation of the six rounds of the Five-Year Economic Development Programs beginning in 1962 of this high growth ratio was attributed to the efficient implementation of the family planning, the maternal and child health care, and the tuberculosis programs.

Improvement in the maternal and child health care programs and the decline in the mortality due to tuberculosis control program contributed to a large extent to the lengthening of life expectancy, and much of the fertility decline during the period was due to the successful implementation of the family planning program.

A recent study shows that contraceptive practice rate as of 1988 stood at 77.1 percent, the total fertility rate was at 1.6, a level far below the replacement level, and the annual population growth rate was down to the one percent level. In 1988, 93.8 percent of all births were delivered at hospitals and clinics, whereas in 1972 only 13.2 percent of all births were at these places.⁵⁾ The tuberculosis prevalence rate is reported to have declined from 4.9 percent in 1966 to 1.8 percent in 1990.⁶⁾ Public health is expected to improve further with the implementation in July 1989 of the national medical insurance system.

Though the nation's family planning program was the major force that helped achieve the current fertility level, which is as low as that of the developed countries, it still has many problems to solve, some of them related to the contraceptive choice/mix and with contraceptive effectiveness/efficiency. That is, currently over 90 percent of contraceptive users were practising contraception primarily for fertility termination rather than birth spacing. Due to the high contraceptive discontinuation rates of temporary methods, induced abortion is used extensively as shown by its extremely high rate. It is sad to note that the yearly number of induced abortions is greater than the number of children born per year.

The primary reason for the high discontinuation rate and the high induced abortion rate has to do with the fact that in Korea, the family planning program started as a population control policy, unlike the family planning programs in some developed countries where the family planning program was designed to help improve the maternal and child health care program. The Fertility Survey of KIPH in 1988 shows that the 12-month discontinuation rates for IUD and the pill were: 47 percent and 66 percent, respectively in 1976 and 46 percent and 72 percent, respectively in 1985 (see Table 2). This high termination rate may be attributed to the shift from a temporary method to sterilization and induced abortions, the inflexible program target system for

5) Hyun-Sang Moon, et al., 1988 National Fertility and Family Health Survey Report, KIPH, 1989.

6) TB Association of Korea, 1991 Activity Report submitted to the National Assembly, Feb. 1991.

Table 2. High Termination Rates of Contraceptive Use, 1985*

Ordinal Month of Use	IUD	Oral Pill
1	12.8	23.0
3	24.6	45.8
6	34.2	59.9
9	39.0	65.5
12	46.0	71.8

* Cumulative termination rates.

Source : KIPH, Fertility Changes in Korea, 1987.

health workers, inadequate follow-up services for temporary contraceptive users, and other factors including side effects and the inconvenience of temporary methods.

In addition, the total abortion rate for married women increased more than 4 times from 0.7 abortion per woman in 1963 to 2.9 in 1978, but it fell to 1.6 in 1987, though married women's abortions in the 20s age group showed an increased trend. This means more attention should be given to motivating these young women to use contraceptives for spacing purpose (see Table 3).

Table 3. Trends in Induced Abortion Rates for Currently Married Women, 1963-1987

Age of Women	1963	1973	1978	1981	1984	1987
20 - 24	16	86	70	74	91	108
25 - 29	29	75	156	158	146	107
30 - 34	58	137	148	146	115	72
35 - 39	40	88	156	106	40	28
40 - 44	-	22	54	48	20	7
T.A.R.	0.7	2.1	2.9	2.7	2.1	1.6

Source : KIPH, 1988 National Fertility and Family Planning Survey Report , 1989.

The future emphasis of family planning program should, therefore, be placed , not on an increase in the contraceptive practice rate and decline in the fertility level, but on the improvement of maternal and child health care through prevention of unwanted pregnancies and induced abortions. Accordingly, there is a need for future family planning program to be integrated with maternal and child health care program. Despite major improvements in socio-economic development and in public health areas in the last twenty years, the family planning worker's activities are still confined mainly to the delivering of services through routine home-visits.

Though the government announced a plan in 1981 for integrated health workers, no specific or concrete measures had been implemented to integrate until July 1985 when specific instructions on the integration plan were given to provincial and city governments. The newly instituted program integrates family planning, maternal and child health care, tuberculosis services into public health education and home health care programs. As with any newly developed program, it is expected that problems will be encountered in carrying out the integration plan, i.e.:

1. Family planning services have been integrated into maternal and child health care services under the title of home health care in name only, and the two programs are still being conducted independent of each other. Ideally, the health workers at the Eup and the Myon offices are required to set up their monthly work plans under the supervision of the county health centers, but at the individual health centers, the home health care section is separated from the tuberculosis section and the two sections have to be integrated in terms of the administrative organization if the integration plan is to be efficiently worked out.

2. The qualification of the health worker poses a major problem when the family planning, the maternal and child health care, and the tuberculosis services are carried out independent of one another, as most of the maternal and child health care services were performed by nurses and midwives, and most of the family planning and tuberculosis services were performed by nurse aids.

When the three services were integrated, however, one health worker had to carry out the work of family planning, maternal and child health care, and tuberculosis services, and in addition, he or she had to perform public health education and home health care services.

3. Since the record and reporting forms currently being used for family planning, maternal and child health care, and tuberculosis services are not yet integrated, unnecessary time and effort are spent filling the separate records and report forms at the individual health centers.

4. According to the integration scheme, health workers are to spend two-thirds of their monthly working hours on home visits, and the remaining one-third on their in-clinic services. But unlike in the past when health workers had to spend most of their time on home visits, there is a greater need for health workers to concentrate on their in-clinic services.

Since in urban areas, the health worker's home visits are unlikely to bring about any substantial results, an entirely new way of approaching the target population will have to be developed.

IV . RECENT CHANGES AND FUTURE POLICY DIRECTIONS

As Korea has completed its demographic transition with a low fertility and a low mortality level, it should shift its role to accommodate recent population policy and program changes as well as to develop future population policy and program directions.

The Korean family planning program that was started in the early 1960s contributed substantially to alleviating rapid population growth, some housing and employment problems, and food grain shortages, but much remains to be done in view of the many issues and problems confronting the nation on its road to a progressive and enthusiastic people. The family planning strategies

used so far have also helped in lowering the total fertility rate from 6.0 in 1960 to 1.6, below the replacement level, in 1987, while increasing the contraceptive practice rate from 9 percent to 77 over the period 1966-88. The factors that contributed to the decline of the fertility level include vigorously effective and efficient implementation of the national family planning programs with strong political support and commitment, wide use of induced abortion, rising marriage age, changing attitudes and norms in the direction of smaller families, and rapid socio-economic development.

With recognized success in reaching the replacement fertility level, the government feels the population problem has been solved and is thus gradually reducing its support for contraceptive supply services to encourage the private organizations to take over family planning services as well as reducing financial assistance and resources to implement provincial and county family planning programs. For example, the government has greatly reduced its government-supported sterilization target from 300,000 in 1986 to 60,000 acceptors in 1991, and the government-supported menstrual regulation services are to be discontinued starting in 1991 (see Appendixes 5-6). Future contraceptive services including sterilization and intra-uterine device services are to be conducted through the national medical insurance system in which the clients, except for those from the low-income group, would have to cover part of the costs incurred by the services they receive. As a result of budget cuts, many health and sub-health centers, which provide family planning services, transferred their MCH staff to other centers, and thus gave low priority to family planning services.

All these measures will definitely lower the contraceptive practice rate, especially the sterilization and menstrual regulation, and increase the total fertility rate, indicating that the population will exceed the projected 50.6 million in 2021. A decrease in contraceptive use and the improper use of contraceptives due to a lack of contraceptive counseling and education would lead to higher use of induced abortion which the family planning programs have tried to reduce or replace with effective contraception. It is imperative, therefore, that the government not withdraw its financial support and

commitment to the family planning program to maintain the achieved low fertility level as well as to reduce undesirable induced abortion, especially among those in the younger age groups.

With the completion of demographic transition, it is strongly suggested that population control policies should be shifted from the current quantity-oriented policy which focuses on fertility reduction to a quality-oriented policy which stresses childspacing, child/family development and care of the elderly.

The four policy measures for influencing the qualitative approach include :

- 1) past family planning program emphasizing sterilization, contraceptive supply/distribution should be directed toward reducing the contraceptive discontinuation rate and induced abortions,
- 2) policy measures should be instituted to deal effectively with the spatial distribution of the population, dealing particularly with the urbanization problem;
- 3) new public health measures designed to improve population quality should be worked out. Included in this category are measures to improve the home health care program, and measures to provide counseling and education services on matters related to reproductive health and family planning for juveniles and unmarried men and women should be introduced.

To be more specific, these measures would include sex education for adolescents, improvement of existing maternal and child health care services and of home health care, counseling services on induced abortion, the development of programs for child-rearing and child welfare, improvement of the marriage counseling services, counseling on child-rearing for married female workers with pre-school children, control of chronic diseases of the aged, improvement of social welfare facilities for the aged, extension of the pensionable age, development of measures for the welfare of the handicapped, the optimal spatial redistribution of population, measures to deal with various urban pathologies including urban crime, traffic congestion, housing problems, and the environmental and ecological issues threatening the quality of life.

Instead of accelerating fertility decline, future policy directions should aim at postponing the achievement of zero population growth as long as possible to avoid rapid population aging problems including a shortage of economically active and young population as well as to allow time to monitor fertility, mortality and population growth and trends for fine-tuning policy measures and directions. The following areas are suggested for careful consideration and future policy directions for the current family planning/health/MCH program.

1. Strong government support for policy and programs and adoption of a self-paying contraceptive distribution system

Strong government, both central and provincial, support and commitment as in the past should be provided to further strengthen quality-oriented population policy and programs which will eventually improve service quality as well as the quality of life. In addition, the free contraception services, including sterilization and reversible methods, should be shifted to a self-paying system, except for low income couples who would be provided free services. This will improve program and service quality as well as relieving the government's financial burden. The government revised the Medical Insurance Law in 1982 to provide contraceptive services including male and female sterilization and IUD, but the 1988 survey data show that only 1.4 percent of all married women practiced contraception through medical insurance benefits, due to the mass distribution of contraceptive services free of charge under the government program.

2. Elimination of incentive schemes for the one-child family

Starting in 1982, the government adopted a variety of slogans, e.g. Two is too many, to discourage people from having more than one child. For instance, those couples who had sterilization operations after having only one child were exempted from delivery expenses at maternity clinics, and those children in the 0-6 year category were given primary health care free of charge.

The one-child slogans and incentive schemes were designed primarily to realize replacement level population as soon as possible. But in 1987, the nation's total fertility level had already gone below the replacement fertility

level of 1.6 per woman, rendering it superfluous to emphasize the one-child policy. It is recommended that future population policy rather place emphasis on a two-child policy.

3. Expanding the family planning target population

The past family planning target population had to be limited to married couples, as its primary objective was to lower the fertility level, but recent socio-economic and cultural developments have brought with them a series of social problems involving unmarried men and women.

A recent survey by KIHASA has revealed that as much as 28 percent of the induced abortions carried out in 1979 were by unmarried females, which increased to 33 percent in 1990. That is, as the age at first marriage increases, a greater number of unmarried men and women are being exposed to a variety of sexual stimulations for a longer period of time, resulting in a greater number of induced abortions.

Future family planning program policy should, therefore, cover not only married couples but also unmarried men and women to prevent pre-marital pregnancies. PPFK, a private organization, has demonstrated that its counseling services on sex education for the unmarried population in industrial complexes has been successful.

4. Change in institutional framework

In 1970, the government established the Korea Institute for Family Planning (KIFP) and in 1976 it also launched the Korea Health Development Institute (KHI). In 1981, for more effective coordination and implementation of related program activities, these two institutes were merged into the Korea Institute for Population and Health (KIPH). In January 1990, better to cope with the increasing demand for research in the social welfare and social security areas, the name of KIPH was changed to the Korea Institute for Health and Social Affairs (KIHASA) to cover three separate research areas; population, public health and medicine, and social welfare. KIHASA should be strengthened with

technical staff and financial resources to conduct more applied policy and program research as well as training workshops, based on Korea's successful experience, for developing countries on how to formulate population policies as well as management, monitoring and evaluation of family planning/MCH programs.

5. Revisions of Family Law and Equal Employment Opportunity Act

In an effort to improve women's status and at the same time to ameliorate the still strong son preference attitude, the government introduced a revision to the current family law in December 1989. According to the revision that went into effect in January 1991, daughters are allowed to assume household headship, and daughters are allowed to claim an equal share of their parent's inheritance, regardless of birth order. In the past, sons were allowed to claim a greater share of their parental inheritance than daughters. In addition, the Equal Employment Opportunity Act was revised in April 1989 to prevent the differential payment between male and female employees in the same job condition.

6. Efficient utilization of health workers

Future family planning should be directed not only toward population control policy, but also toward the improvement of maternal health and household welfare, and for this purpose, the following several points on the health worker utilization should be emphasized:

a. Streamlining program organization

For integration to be realized, the organizational structure of the health service at the health center and the health subcenter levels should be streamlined, so if the full integration is to be implemented, family planning, maternal and child health care, and tuberculosis services should be placed under one organization which can exercise better control and supervision over the services.

b. Reassignment and training of health workers

About 71.5 percent of the total of 5,337 health workers are located in rural areas, resulting in a shortage of health workers in urban areas whose population accounts for 80 percent of the nation's population. Health workers should, therefore, be reassigned to increase the number of health workers in urban regions. As 63.5 percent of the total of health workers are nurse-aids, a training program should be instituted for them.

c. Improvement of health worker services

In the past, the family planning program's main emphasis was on fulfilling the target number of contraceptive acceptors set by the government. Future program should focus on the low-income population. In the field of family planning, contraceptive information services should be provided to those who visit health centers for vaccination. Moreover, in urban areas, it is becoming increasingly difficult to conduct home visits for one reason or another, so it would be time and effort saving if health workers could keep in touch with their clients by telephone or mail, and home visits should be limited to those unable to go to health centers.

d. Medical facility improvement

Health centers and subcenters should be equipped with a counseling room in which the client could discuss health matters with the health worker without any interference from other people. Health centers should also be able to provide reproductive health education for juveniles at the centers on a regular basis, i.e., weekly or monthly. Health centers and subcenters should have basic medical facilities which could provide simple medical service whenever necessary.

e. Standardization of record and reporting forms

As yet, the record and reporting forms for family planning, maternal and child health care, and tuberculosis programs have not been standardized, effort should be made to have all these forms standardized for a fuller integration of the program.

f. Development of manual for the integrated health workers

At present, there are three separate manuals for the family planning, maternal and child health care, and tuberculosis programs. A standard manual covering the three programs should be developed for better management of the integrated program. The standard manual should specify the responsibilities and roles of the health workers, supervisors, the organizational structure, and the evaluation system.

7. The aging of the population, which resulted from low fertility and lowmortality as well as longer life expectancy, suggests that a major shift of expenditures should be made from education and other social welfare provisions to health care, support and welfare for the elderly. It also means that employment policy will have to shift from new job creation for young entrants to development and retraining programs for older workers.

Though the relatively young age structure in Korea will generate an older age structure in an eventually stationary population in about 30 years, its policy and program implications must be given serious consideration now, to avoid the situations now faced by developed countries which have zero or negative population growth rates.

8. Traditional Korean society is modernizing along with rapid socio-economic development. In recent years, young people had problems related to drug abuse and risk-taking, violent behaviours. These problems may be due to social factors such as lack of civic and humanity education, confusions and conflicts in adjusting to value changes, changes in family structure and family ties due to fertility decline, and mass media influences. In order to improve family welfare for young people, the FP/MCH program needs to plan and implement activities including information, education, and motivation (IEM) for them.

V. CONCLUSION

As Korea has achieved its demographic transition with a low mortality rate and a below replacement fertility level, it should change its role to accommodate recent population policy and program changes as well as design and develop future population policy and program directions in accordance with its emerging socio-economic and demographic condition.

With the current severe reduction in government support and commitment to the family planning/MCH program in terms of funds and resources, the contraceptive practice rate will drop substantially and the induced abortion rate increase significantly. This will result in a higher population growth rate, over one percent, and an increased total fertility rate. Taking into account the demographic and socio-economic situations of Korea, it is, therefore, strongly suggested that the government change its policy and program directions to maintain the low fertility level and postpone the achievement of a zero population growth rate, to invigorate the population with more economically active individuals for greater economic development and improvement of the quality of life. This can be achieved through strengthening the existing FP/MCH programs with a flexible target system, including higher targets for temporary contraceptives instead of sterilizations. That is, the qualitative aspects of the programs and services should be more substantially emphasized than the quantitative aspects as in the past. The improved program and service quality will not only drastically reduce harmful induced abortions but also facilitate the achievement of such future population policy and program directions as maintaining a low fertility level and postponing the realization of zero population growth rate to a much later date.

In view of the complexity involved in implementing future population policy and program management including program planning, monitoring and evaluation, KIHASA should strengthen its research and evaluation capabilities so that it can play a more dynamic and effective role in providing technical assistance to the government and relevant program implementing agencies.

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Appendix 1. Age-Specific Fertility Rates and Total Fertility Rates by Residence, 1960-1987

Age	1960 ¹⁾	1966 ¹⁾	1968 ¹⁾	1970 ¹⁾	1971 ¹⁾	1973 ¹⁾	1974 ¹⁾	1976 ²⁾	1982 ²⁾	1985 ³⁾	1987 ³⁾
Whole country											
15 ~ 19	37	15	7	13	6	10	11	10	12	7	3
20 ~ 24	283	205	146	168	188	145	159	147	161	162	104
25 ~ 29	330	380	301	278	341	301	276	275	245	187	168
30 ~ 34	257	242	201	189	234	220	164	142	94	52	39
35 ~ 39	196	150	120	101	124	88	74	49	23	8	6
40 ~ 44	80	58	65	39	41	19	29	18	3	1	3
45 ~ 49	14	7	7	7	3	3	3	1	-	-	-
TFR	6.0	5.4	4.2	3.9	4.7	3.9	3.6	3.2	2.7	2.1	1.6
Urban											
15 ~ 19	22	4	6	8	3	7	6	5	6	8	1
20 ~ 24	223	119	113	141	166	104	135	163	137	155	92
25 ~ 29	316	278	297	258	316	284	262	258	229	183	165
30 ~ 34	250	209	169	141	196	195	129	120	87	53	40
35 ~ 39	184	92	77	63	91	50	42	36	9	5	4
40 ~ 44	81	48	28	18	29	13	13	11	4	-	4
45 ~ 49	-	8	-	3	-	-	2	3	-	-	-
TFR	5.4	3.7	3.5	3.1	4.0	3.3	2.9	2.8	2.4	2.0	1.52
Rural											
15 ~ 19	48	16	8	17	9	14	16	16	25	4	9
20 ~ 24	291	243	178	189	211	206	192	173	217	182	156
25 ~ 29	354	424	305	291	363	324	298	278	286	200	177
30 ~ 34	308	284	220	212	266	249	206	173	110	48	35
35 ~ 39	237	228	147	126	144	117	103	54	29	17	13
40 ~ 44	115	96	87	50	49	25	41	26	3	2	3
45 ~ 49	-	12	11	7	4	5	4	-	-	-	-
TFR	6.7	6.5	4.8	4.4	5.2	4.7	4.3	3.6	3.3	2.3	1.96

Source : 1) Byung Tae Park. et. al., *The 1976 National Fertility and Family Planning Evaluation Survey*. Korean Institute for Family Planning 1978. pp. 113 ~ 124.

2) Hyun Sang Moon. et. al., *National Fertility and Family Health Survey Report*. Korea Institute for Population and Health. 1982 . PP. 26 ~ 33.

3) KIPH. *1988 National Fertility and Family Health Survey Report*. 1989, pp. 123 ~ 128.

Appendix 2. Population and Selected Vital Rates, 1985-2021

(Unit : Thousand)

Year	Total Pop.	CBR	CDR	PGR(%) *
1985	40,806	1.64	0.62	0.93
1990	42,869	1.56	0.58	0.93
1995	44,851	1.52	0.59	0.93
2000	46,789	1.42	0.61	0.77
2010	49,683	1.13	0.72	0.37
2021	50,586	1.00	0.97	0.01

* Including international migration.

Source : BOS/EPB, Population Projections; 1990-2021, 1991

Appendix 3. Population Structure and Dependency Ratios. 1985-2021

(Unit : Thousand)

Year	Total Pop.	0 ~ 14		15 ~ 64		65 or More		Dependency Ratio(%)
		Pop.	%	Pop.	%	Pop.	%	
1985	40,806	12,305	30.2	26,759	65.6	1,742	4.3	52.5
1986	41,184	11,994	29.1	27,400	66.5	1,790	4.4	50.3
1987	41,575	11,706	28.2	28,024	67.4	1,846	4.4	48.4
1988	41,975	11,451	27.3	28,619	68.2	1,905	4.5	46.7
1989	42,380	11,238	26.5	29,178	68.9	1,964	4.6	45.3
1990	42,869	11,077	25.8	29,648	69.2	2,144	5.0	44.5
1991	43,268	10,947	25.3	30,109	69.6	2,212	5.1	43.7
1992	43,663	10,832	24.8	30,548	70.0	2,283	5.2	43.2
1993	44,056	10,728	24.4	30,966	70.3	2,362	5.4	42.2
1994	44,453	10,581	23.8	31,422	70.7	2,450	5.5	41.5
1995	44,851	10,400	23.2	31,908	71.1	2,543	5.7	40.6
1996	45,248	10,214	22.6	31,391	71.6	2,643	5.8	39.7
1997	45,642	10,047	22.0	32,835	71.9	2,760	6.0	39.0
1998	46,033	9,938	21.6	33,210	72.1	2,886	6.3	38.6
1999	46,416	9,906	21.3	33,490	72.2	3,019	6.5	38.6
2000	46,789	9,917	21.2	33,705	72.0	3,168	6.8	38.8
2005	48,434	9,841	20.3	35,636	71.5	3,956	8.2	39.8
2010	49,683	9,510	19.1	35,505	71.5	4,668	9.4	39.9
2015	50,246	8,790	17.5	36,146	71.8	5,410	10.7	39.3
2021	50,586	7,989	15.3	35,972	71.1	6,625	13.1	40.6

Source : BOS/EPB, Population Projections; 1990 ~ 2021, 1991.

Appendix 4. Changes in the Age Composition of Japan, 1890-2025

Year	Age Composition(%)			Mean Age	Dependency Ratio(%)			Elderly/ Child Ratio
	0 ~ 14	15 ~ 64	65 +		Total	Child	Old-age	
1890	28.15	65.16	6.69	30.7	53.5	43.2	10.3	23.8
1910	33.89	60.68	5.43	28.0	64.8	55.8	8.9	16.0
1920	36.48	58.26	5.26	26.7	71.6	62.6	9.0	14.4
1925	36.70	58.24	5.06	26.5	71.7	63.0	8.7	13.8
1930	36.59	58.66	4.75	26.3	70.5	62.4	8.1	13.0
1935	36.89	58.46	4.66	26.3	71.1	63.1	8.0	12.6
1940	36.08	59.19	4.73	26.6	69.0	61.0	8.0	13.1
1947	35.30	59.90	4.79	26.7	66.9	58.9	8.0	13.6
1950	35.41	59.64	4.94	26.6	67.7	59.4	8.3	13.9
1955	33.44	61.24	5.29	27.6	63.3	54.6	8.7	15.9
1960	30.15	64.12	5.72	29.0	55.9	47.0	8.9	19.0
1965	25.73	67.98	6.29	30.3	47.1	37.9	9.2	24.4
1970	24.03	68.90	7.06	31.5	45.1	34.9	10.3	29.4
1975	24.32	67.72	7.92	32.5	47.6	35.9	11.7	32.6
1980	23.50	67.35	9.10	34.0	48.4	34.9	13.5	38.7
1985	21.51	68.18	10.30	35.7	46.7	31.6	15.1	47.9
1986	20.90	68.52	10.58	36.0	45.9	30.5	15.4	50.6
1987	20.24	68.86	10.90	36.4	45.2	29.4	15.8	53.8
1990	18.62	69.45	11.93	37.4	44.0	26.8	17.2	64.1
1995	17.55	68.33	14.12	38.7	46.3	25.7	20.7	80.4
2000	17.98	65.75	16.26	39.8	52.1	27.4	24.7	90.5
2005	18.74	63.23	18.02	40.6	58.1	29.6	28.5	96.2
2010	18.63	61.42	19.96	41.5	62.8	30.3	32.5	107.1
2015	17.56	59.89	22.54	42.4	67.0	29.3	37.6	128.3
2020	16.50	59.94	23.56	43.0	66.8	27.5	39.3	142.8
2025	16.40	60.24	23.37	43.3	66.0	27.3	38.8	142.5

Source : For 1980 ~ 1985, Japan, Bureau of Statistics, Population Censuses ; for 1990 ~ 2025, Institute of Population Problems, Ministry of Health and Welfare, Population Projections of Japan 1985 ~ 2085 (Tokyo, 1987).

Appendix 5. Percentage of Married Women Practicing Contraception by Selected Characteristics, 1979-1988

(Unit : %)

	1979	1982	1985	1988
Contraceptive Practice Rate	54.5	57.7	70.4	77.1
Method :				
Pill	7.2	5.4	4.3	2.8
Condom	5.2	7.2	7.2	10.1
I.U.D	9.6	6.7	7.4	6.7
Tubectomy	14.5	23.0	31.6	37.2
Vasectomy	5.9	5.1	8.9	11.0
Others	12.1	10.3	11.0	9.3
Residence :				
Urban	55.1	58.7	71.5	77.7
Rural	53.6	55.7	67.7	75.5
Age of Wife :				
15 ~ 24	18.3	22.3	35.8	44.4
25 ~ 29	40.9	44.4	60.8	65.4
30 ~ 34	68.5	71.6	84.2	86.8
35 ~ 39	71.9	79.9	87.2	89.6
40 ~ 44	53.3	62.5	69.6	81.6
Parity :				
0	7.0	11.0	13.8	21.0
1	20.7	24.3	44.7	58.1
2	58.7	66.7	82.5	89.3
3	69.0	76.4	84.5	90.5
4	68.9	70.8	80.1	87.6
5+	58.5	64.2	76.3	83.8

Source : KIPH. 1988 National Fertility and Family Health Survey Report. 1989.

Appendix 6. Contraceptive Acceptors by Government Program, 1962-1991

(Unit : Thousand(%))

Year	IUD	Sterilization	Condom	Oral Pill	Total
1962 ~ 66	725.6 (47.9)	82.3 (5.5)	706.1 (46.6)	-	1,514.0 (100.0)
1967 ~ 71	1,460.8 (52.3)	87.1 (3.1)	759.8 (27.2)	487.7 (17.4)	2,795.4 (100.0)
1972 ~ 76	1,619.2 (42.3)	219.5 (5.7)	859.1 (22.4)	1,134.2 (29.6)	3,832.0 (100.0)
1977 ~ 81	1,067.0 (33.2)	1,089.9 (33.9)	447.5 (13.9)	612.2 (19.0)	3,216.6 (100.0)
1982 ~ 86	1,017.9 (27.6)	1,732.6 (47.0)	591.8 (16.1)	344.4 (9.3)	3,686.7 (100.0)
1987 ~ 91*	1,066.9 (39.5)	886.9 (32.8)	624.5 (23.1)	125.3 (4.6)	2,703.6 (100.0)
Total(62 ~ 91)	6,957.4 (39.2)	4,098.3 (23.1)	3,988.8 (22.5)	2,703.8 (16.2)	17,748.3 (100.0)
1982	199.1	286.7	101.6	113.0	700.4
1983	213.1	427.0	127.3	82.4	849.8
1984	195.4	378.7	129.7	59.2	763.0
1985	176.9	327.7	124.9	44.0	673.5
1986	233.4	312.5	108.3	45.8	700.0
1987	242.5	294.9	144.1	39.3	720.8
1988	251.9	236.7	137.8	29.3	655.7
1989	235.9	181.8	140.0	29.4	587.1
1990	186.6	113.5	102.6	22.3	420.5
1991*	150.0	60.0	100.0	5.0	315.0

* 1991 Program Target

Source : Family Planning Monthly Reports, 1962-1991.

RECENT CHANGES IN THE NATIONAL FAMILY PLANNING PROGRAM AND ITS FUTURE DIRECTIONS IN THE ROC

*Ming-Cheng Chang**

I. INTRODUCTION

The island-wide family planning program in Taiwan started in January 1964 and grew out of a large-scale experimental study of the acceptability of contraception carried out in the city of Taichung in 1963 (Freedman and Takeshita, 1969). Thereafter, several mid-term plans for the intensive promotion of family planning program in Taiwan Area have been carried out (Sun and Chang, 1989). The main purposes of these programs are to encourage the acceptance of contraceptive methods by married women of childbearing ages, to urge couples to plan effectively their child-bearings, to improve the welfare of families and to reduce the population growth in Taiwan Area. Until recently, a new family planning program (FYs 1991 - 1994) was formulated to emphasize the population quality and reasonable population growth.

The recent changes in the program emphases stemmed from the recent fertility transition. Taiwan's net reproduction rate (NRR) fell to 1.0 in 1983 and to about 0.85 in 1990. In 1965, when the island-wide family planning program started, the total fertility rate (TFR) was 5.75 and the net reproduction rate, 2.52. The sustained fertility decline, however, began earlier. In 1955, the total fertility rate was as high as 6.55 and the net reproduction rate 2.82. Taiwan has completed the fertility aspect of demographic transition in 20 years after the initiation of the intensive family planning program. In the meantime, Taiwan has almost reached a perfect contraceptive society of universal contraceptive use--the goal which most of developing countries with population and family planning programs strive to achieve (Chang et al, 1987).

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Along with Taiwan's fertility transition, the nature of population problems in Taiwan is now shifting from high fertility to problems associated with low fertility. The main purposes of this paper are (1) to provide demographic information about prospectives of future growth and changes in age composition in Taiwan through which the new population policy was developed; (2) to report recent changes in the family planning program; and (3) to suggest future policy directions.

II. NEW POPULATION PROJECTIONS

After reaching fertility replacement level in Taiwan, several studies by using various plausible population projections have been undertaken to examine possible changes in the future age structure and its socio-economic implications (Freedman, 1986; Chang and Wang, 1987; Chang, 1988; Sun and Chang, 1989; Tu, 1989; Tu and Chen, 1989; Tu, 1990; Chang, 1990; Sun, 1991). The major observations resulting from these studies are summarized below:

1. Continued low fertility inevitably will lead not only to slower growth, or even negative growth, but also to the aging of population. This means that Taiwan has to face the adjustments to the older age structure. The more rapid the decrease of fertility rates, the more rapid is the aging process. Furthermore, the more rapid the decrease in fertility, the larger are the breaks in the age structure.

2. In the absence of massive immigration, the changing age composition caused by the sustained below-replacement fertility will pose a problem on the declining share of persons below working age and the increasing share of the elderly. There will be major shift in the relative numbers of young (under 15) and old (over 65) dependents, implying a very large shift in relative expenditures from education and child-welfare provisions to health, support, and welfare costs for the elderly.

3. Population aging will result in a rapid growth in the incidence of sickness, hospital stay for care, and financial resources required for medical services in Taiwan, which is attributable, in part, to an increase in the overall population, but to a greater extent, to an increase in the elderly population and the aging of patients.

4. The aging of population will accompany the aging of labor force. Problems posed by the aging of labor force are no less serious than those posed by the age shift in the non-working population. It is possible that the increasing share in the labor force of older, less mobile and flexible workers will give to retraining schemes for older personnel, thus shifting a share of the training expenditures from younger to older persons.

5. The trends in fertility make it clear that, in the future, increasing number of the elderly will have fewer children to call upon. It was estimated that women 60-69 years old will have two fewer children ever born on average in 2010 than they do now and, nearly three fewer children by the year 2020.

6. In the long run, if fertility is kept at below replacement, Taiwan's population will turn to negative growth, and the size of population will be reduced. For example, if the fertility and mortality were to follow the past trends of decline, it is likely that the population would begin to decrease after the year 2005 with a maximum population of about 21.5 million , adding about 1.2 million people.

There is consentaneous among members of the Population Policy Committee of the Ministry of Interior that the NRR in Taiwan should be brought to one in the future. The question is how long it will take to bring the fertility up to replacement level. Of course, it depends on what actions can be taken within the confines of the respective institutions. It seems inadequate to adopt western incentive schemes to upgrade fertility level simply because Taiwan's density is so high that increasing fertility will create more problems, such as those of additional pollution, greater urban density, timing of job creation, and so on.

Some policy makers and people are not in favor of this option. As such, Taiwan's new population policy is aiming at pursuing a reasonable population growth in the sense that the NRR will be gradually brought to the replacement level through nonincentive measures to be discussed later.

A. New Projections for Population Planning

Following the fertility goal set up by the Population Policy Committee, the Council for Economic Planning and Development (CEPD) has made a population projection for six-year National Development Plan for help in the population planning. The basic assumptions for the projections are as follows:

- (1) 6,000 net outmigrants per annum, and 5,000 for ages 20-34.
- (2) Total fertility rate will decrease from 1,730 in 1990 to 1,700 in 1996, and then increase to 1,780 for the year 2000 (the year of dragon). Thereafter, it will increase gradually to 2,000 by the year 2026.
- (3) Life expectancy at birth will increase from 71.07 for male in 1990 to 75.0 by 2036 and for female from 76.06 to 80.0 in the same period.
- (4) Sex ratio at birth will stay at 107.5 throughout the projection period.

The component population projection method was adopted to project single age population for male and female using the US Census Bureau program. The main differences between this projection and those projections mentioned in the previous two ROK and ROC workshops are that the present projection assumes a small amount of net out-migration, and much slower fertility decline, and even a gradual increase after the year 2000.

Projected results are displayed in Table 1. Roughly, they show that the population will grow by about 5 million from 20 million in 1990 to 25 million in 2035, and then start to decline. The apparent paradox of continuing substantial growth despite attainment of below replacement level fertility is due to a consequence of a temporarily young age structure, resulting from formerly higher fertility levels. After replacement-level fertility is attained in 2035 and remains unchanged thereafter, the negative population growth will keep for a while

Table 1. Population Projection for Population Planning in Taiwan Area , R.O.C., 1989-2036

Year	Mid-year population (1,000)	Number of (1,000)			Rate of (per 1,000)			Population (1,000)	
		Natural increase	Births	Deaths	Natural increase	Births	Deaths	65 years or older	75 years or older
1989	20,011	212	315	103	10.57	15.72	5.15	1,170	343
1990	20,215	210	322	112	10.38	15.91	5.53	1,231	357
1991	20,414	205	321	116	10.04	15.72	5.68	1,293	372
1992	20,610	202	317	115	9.80	15.40	5.60	1,357	388
1993	20,803	198	316	118	9.54	15.20	5.66	1,423	407
1994	20,992	195	315	120	9.28	15.00	5.72	1,490	429
1995	21,177	191	313	122	9.02	14.80	5.78	1,555	454
1996	21,358	187	312	125	8.78	14.62	5.84	1,618	482
1997	21,538	185	312	127	8.59	14.50	5.91	1,679	513
1998	21,715	183	314	131	8.44	14.45	6.01	1,736	546
1999	21,891	181	315	134	8.29	14.41	6.12	1,790	580
2000	22,065	179	321	142	8.14	14.56	6.42	1,842	616
2001	22,237	177	324	147	7.96	14.55	6.59	1,890	651
2002	22,410	179	322	134	7.98	14.38	6.40	1,940	688
2003	22,582	178	325	147	7.87	14.37	6.50	1,988	724
2004	22,752	177	327	150	7.76	14.36	6.60	2,034	759
2005	22,922	175	328	153	7.64	14.33	6.69	2,079	792
2006	23,089	173	329	156	7.48	14.26	6.78	2,122	824
2007	23,253	170	329	159	7.30	14.16	6.86	2,164	855
2008	23,413	166	328	162	7.09	14.02	6.93	2,206	884
2009	23,569	161	326	165	6.84	13.84	7.00	2,250	913
2010	23,720	156	323	167	6.58	13.64	7.06	2,300	941
2011	23,864	150	320	170	6.28	13.40	7.12	2,354	967
2016	24,452	103	295	192	4.24	12.08	7.84	2,747	1,083
2021	24,831	69	285	216	2.79	11.50	8.71	3,454	1,197
2026	25,094	52	298	246	2.08	11.86	9.78	4,223	1,429
2031	25,253	23	305	282	0.90	12.06	11.16	4,833	1,861
2036	25,220	-19	301	321	-0.77	11.92	12.69	5,173	2,258

Source : Medium projection by the Council for Economic Planning and Development, 1990

Table 1. (continued)

Year	Proportion (%) by age				Dependency ratio (%)		Aging index		Median age	Sex ratio for 65+
	0-14	15-64	65+	75+	0-14		65+ 0-14			
					15-64	65+				
1989	27.67	66.48	5.85	1.72	40.62	8.80	21.14	76.81	113.0	
1990	20.08	66.83	6.09	1.76	40.52	9.11	22.49	27.28	119.6	
1991	26.47	67.20	6.33	1.82	39.39	9.42	23.91	27.76	116.5	
1992	25.84	67.57	6.59	1.89	38.24	9.75	25.50	28.23	118.1	
1993	25.19	67.97	6.84	1.96	37.06	10.06	27.15	28.71	119.4	
1994	24.53	68.37	7.10	2.04	35.88	10.38	28.94	29.18	120.3	
1995	23.88	68.78	7.34	2.14	34.72	10.67	30.74	29.67	120.5	
1996	23.25	69.17	7.58	2.25	33.61	10.96	32.60	30.14	120.0	
1997	22.65	69.56	7.79	2.38	32.56	11.20	34.39	30.60	118.9	
1998	22.08	69.93	7.99	2.51	31.57	11.43	36.19	31.05	117.3	
1999	21.56	70.26	8.18	2.65	30.69	11.64	37.94	31.49	115.4	
2000	21.20	70.45	8.35	2.79	30.09	11.85	39.39	31.92	113.3	
2001	20.91	70.59	8.50	2.93	29.62	12.04	40.65	32.31	111.1	
2002	20.68	70.67	8.66	3.07	29.26	12.25	41.88	32.69	108.9	
2003	20.52	70.68	8.80	3.21	29.03	12.45	42.88	33.04	106.6	
2004	20.43	70.62	8.95	3.34	28.93	12.67	43.81	33.37	104.3	
2005	20.39	70.54	9.07	3.46	28.91	12.86	44.48	33.67	102.1	
2006	20.38	70.43	9.19	3.57	28.94	13.05	45.09	33.95	100.2	
2007	20.37	70.32	9.31	3.67	28.97	13.24	45.70	34.23	98.4	
2008	20.37	70.21	9.42	3.78	29.01	13.42	46.24	34.50	96.9	
2009	20.36	70.09	9.55	3.89	29.05	13.63	46.91	34.81	95.6	
2010	20.35	69.96	9.69	3.97	29.09	13.85	47.62	35.13	94.4	
2011	20.32	69.82	9.87	4.05	29.10	14.14	48.57	35.47	93.3	
2016	19.34	69.42	1 1.24	4.41	27.86	16.19	58.12	37.30	89.9	
2121	18.28	67.81	1 3.91	4.82	26.96	20.51	76.09	39.50	88.6	
2026	17.43	65.74	1 9.83	5.70	26.51	30.16	113.77	40.51	87.9	
2031	17.29	63.57	1 9.14	7.37	27.20	30.11	110.70	40.83	87.2	
2036	17.65	61.84	2 0.51	8.96	28.54	33.17	116.20	40.50	86.4	

Source : Medium projection by the Council for Economic Planning and Development, 1990.

before zero growth is attained.

During the projected period 1990-2035 , the crude birth rate will fall from 15.9% to 11.9%, and the crude death rate will rise from 5.5% to 12.7% due to the aging of population. In absolute size, the number of births will stay around 300,000 and the number of deaths will increase from 112,000 to 320,000 during the corresponding period.

Like any recent projections made in Taiwan, the aging of population is virtually inevitable, though the current projection allows for a gradual increase in the total fertility rate up to 2,000 in 2026 with a levelling off at that point. As indicated in Table 1, the proportion of population aged 65 and above will increase from 6% to more than 7% in 1994, becoming one of the aged communities in the world , and then continue to increase to more than 10% in 2035. The proportion for 75 years old or older will increase from 1.7% to more than 4% in 2011 and to more than 8% in 2033. On the other hand, the aging index, which shows the speed of aging, will increase from 20 to more than 100 by 2024, i.e. the number of old population (65+) will exceed young population (15-) thereafter.

Most policy issues related to aging of a population involve adjustment to radically different age structures. The aging of a population could theoretically be retarded by pushing the total fertility rate up to 2,000 in 2026 – the goal set up by the government. In the current projection, the current relatively young age structure in Taiwan means that the older age structure of an eventually stationary population will not be reached for at least 45 years.

What are the differences in age structures between the current projection and the one with further fertility decline for sometime in the future? To answer this question, another projection accepting more radical decline of total fertility rates to 1,600 by the year 2,000 and levelling off at that point as posited in the "low" official projection was used for comparison.

As shown in Table 2, the more radical "low" assumption produces a near zero-growth population of around 23.8 million in 2022, with a projected decline in the rate of natural increase to -0.75‰ per annum by 2026 and to about -4.63‰ by 2036. In terms of the shifts in aging, the more rapid the decrease of growth rates, the more rapid is the aging process. For example, the proportion of population aged at 65 and above in 2026 will be 16.83% for the medium projection against 17.60% for the low projection. Moreover, the number of births will decrease from 322,000 in 1900 to 298,000 and 223,000 in 2026 for the medium and low projections respectively. Consequently, the aging index turns out to be higher for the low projection during the projected period (Table 2).

These two different population projections illustrate that Taiwan will eventually produce a negative rate of growth in about 33 years or 43 years from now, even if the total fertility rate could be brought back to 2,000 by the year 2026. Also, the aging of the population is inevitable. The more rapid the decrease of growth rates, the more rapid is the aging process, especially for the period of the negative population growth.

B. Implications

The problems resulting from an aging population have been discussed widely and also summarized from Taiwan's aging studies at the beginning of this section. They need not be recounted in detail. Instead, it seems more useful to supplement the previous findings from data of the 1989 Taiwan aging survey and other related studies.

In Taiwan, under current circumstances, there will be a major shift in the relative numbers of young (under 15) and old (over 65) dependents, moving from a young/old ratio of 4.4 to 1 in 1990 to about 1 to 1.1 in 2060 (Table 1). This suggests that future cohorts of the elderly will have fewer children. Recent census and survey data on children ever born (CEB) to women who have already completed their childbearing (say 40 and over) enable us to project forward with

Table 2. Low Official Projection* for Taiwan, 1990-2036

Year	Mid-year population (1,000)	Number of population change (1,000)		Rate per 1,000 mid-year population		End-year total population (1,000)
		Natural increase	Deaths	Natural increase	Births	
1990	20,215	210	322	10.38	15.91	20,318
1991	20,415	206	322	10.10	15.78	20,512
1992	20,609	199	318	9.67	15.44	20,706
1993	20,795	192	314	9.23	15.10	20,884
1994	20,973	184	309	8.79	14.76	21,062
1995	21,144	177	305	8.36	14.43	21,226
1996	21,309	170	301	7.99	14.15	21,392
1997	21,469	165	299	7.69	13.92	21,546
1998	21,623	160	296	7.41	13.71	21,700
1999	21,773	155	294	7.14	13.51	21,846
2000	22,019	151	292	6.91	13.35	21,992
2001	22,062	148	292	6.72	13.25	22,132
2002	22,202	146	293	6.58	13.21	22,272
2003	22,341	144	294	6.44	13.18	22,410
2004	22,477	141	295	6.30	13.14	22,544
2005	22,610	139	296	6.14	13.08	22,676
2006	23,740	135	295	5.94	12.98	22,804
2007	23,866	131	294	5.72	12.85	22,928
2008	23,986	125	291	5.46	12.68	23,044
2009	23,099	119	288	5.15	12.45	23,154
2010	23,205	111	282	4.77	12.15	23,256
2011	23,302	102	276	4.40	11.85	23,348
2016	24,667	59	246	2.51	10.40	23,692
2021	24,813	20	232	0.83	9.74	23,820
2026	25,770	18	223	0.75	9.40	23,752
2031	25,535	59	219	2.51	9.30	23,504
2036	25,069	107	210	4.63	9.10	23,006

* Total fertility rate is assumed to drop from 1,730 in 1990 to 1,630 by 1996 and 1,600 by 2000. Other assumptions are the same as the medium projection.

Source : Low projection by the Council for Economic Planning and Development, Executive Yuan, May 1991.

a high degree of certainty (Chang, 1990; Hermalin and Christenson, 1990). Women 60 to 69 years old will have two fewer CEB on average in 2010 than they do now and, we estimate, nearly three fewer by the year 2020. But the 60 to 69-year olds are the youngest of the elderly and can be expected to be relatively healthy and active. The sharp drop in fertility will come later to the older age groups among the elderly. For example, for those 70 and over, the decrease will be less than one child on average between 1990 and 2010, and they will maintain an average of four CEB as late as 2015. This provides a somewhat longer cushion for fashioning new social, economic and financial arrangements. Other aspects of family structure are also important, of course. For example, Hermalin and Christenson (1990) also show that there will be an increasing disparity in the educational level between children and parents for the next 15 to 20 years before they start to converge, and this has implications for living arrangements and exchanges of support.

One consequence of the past high fertility is that while a high percentage of older adults are living with their married children, a large proportion of children are not living with a parent, though many live nearby and have frequent contact. Nevertheless, this suggests that when a sizeable proportion of adults of reproductive age report that they do not expect to live with their children in old age, this opinion may not be well informed by a close knowledge of the kind of support that children are often called upon to provide (Chang, 1987). In this connection, note that dissatisfaction reported by the current elderly in the survey was greatest for physical care and instrumental activities of daily living -- areas for which substitutes for children are often hardest to find.

The trends in fertility make it clear that, in the future, increasing numbers of elderly will have fewer children to call upon. How serious a problem is this likely to be? The analysis of the 1989 Taiwan aging survey data indicated that the number of supports received depends on the number of children, and that support tends to be diffused across many providers, points to substantial shortfalls unless alternate arrangements are in place (Hermalin et. al. 1990). A closer examination, however, provides partial reassurance: much of the support

comes from a son and daughter-in-law, with complementary services in the form of material goods from a daughter. Thus, an older person or couple with only two children might draw considerable support from a properly filial, economically self-sufficient, and geographically proximate son, daughter-in-law, and daughter. But, of course, not all children will be able or willing to provide support, and the decrease in fertility will certainly leave increasing numbers of elderly vulnerable to isolation and lacking in needed assistance unless alternate arrangements are in place.

Older couples who may be particularly vulnerable are those who have only daughters. Under current cultural norms, it is very rare for an older person (or couple) to live with a married daughter, since the daughter "belongs" to her husband's family. A simple-minded calculation will illustrate how serious this norm can be : If future generations have only two children on average (and the current TFR is below 2) and we assume that every couple has exactly two children, then 25 percent of couples would have only daughters. Unless things change, they would have no chance of living with their children (assuming the daughters marry). How might things change and what would be the consequences?

If we assume random mating, 75 percent of the families with two daughters would have at least one daughter marry into a family with two sons. If this son was not responsible for living with his parents (that is, his brother would have married into a family in which there was a son), then it would be possible for both sets of parents to live with or otherwise be supported by their children -- one set living with a son and daughter-in-law, and the other set with their daughter and son-in-law. This change alone would greatly reduce the proportion of parents without recourse to children. In addition, if this type of arrangement became acceptable, one could imagine a change in mating patterns in which women from daughter-only families favored "second sons" who were not responsible for the support of their parents. This would further reduce the proportion of "vulnerable" couples.

All of this is, of course, highly speculative. Whether any changes of this type are in the offing is impossible to tell. Cultural norms are slow to change, but when faced with conflicting norms (living with children vs. not living with married daughters), societies are often ingenious in coming up with solutions that maintain those aspects most valued.

If the above speculation turns out to be true, there will be increasing numbers of future cohorts of the elderly vulnerable to isolation and lacking in needed assistance. Other things being equal, the situation will enforce a more shift in relative expenditures from education and child-welfare provisions to health, support, and welfare costs for the elderly. Indeed, in many of western countries, there is a decline in real per capita student expenditures on education, while an increase in real per capita spending on the aged is observed. If Taiwan is following this pattern, the transformation from labor-intensive economy to high technology and capital-intensive economic structure would be more difficult simply because of less human-capital investments for upgrading education and on-the-job training. Therefore, with a flexible, highly trained, and adaptable work force, and an emphasis on upgrading the skills of future generations, Taiwan should avoid some of the problems that are emerging in other countries.

III . RECENT CHANGES IN THE FAMILY PLANNING PROGRAM

The four-year new family planning program started in July 1990 and will be carried out through June 1994. The general objectives and measures of the program as per the "Promoting New Family Planning Program in Taiwan Area, Republic of China, FYs 1991-1994" by the Department of Health of the Executive Yuan, are listed as follows:

A. Objectives of the Program

The program is formulated in accordance with the Genetic Health Law, the Economic Development Plan of the Republic of China, and the Population Policy

of the Republic of China, to promote family planning and genetic health. The major objectives of the program are to encourage people to practice family planning, and to accept services in genetic health with a hope to keep population growth at a reasonable rate, to reduce the occurrence of congenital deformities, to improve family happiness and to upgrade the quality of population.

B. Program Measures

1. Provision of contraceptive services

a. Provision of safe and effective contraceptive methods:

- 1) continue to promote IUDs such as Cu-T and Multiload, oral contraceptive pills, condoms and male and female sterilizations;
- 2) make available other copper and hormonal IUDs, bring in the long-effect contraceptive implants and other new oral contraceptive pills for more choices;
- 3) immediately bring in safe and effective newly developed contraceptive methods to give people more choices, improve the rate of continuing use of contraceptive, and reduce the number of accidental pregnancies and induced abortion.

b. Extending the target groups:

Contraceptive counseling and supplies will be made available with simplified application procedures to all people of childbearing ages regardless of their marital status to reduce pre-marital pregnancies and child-births by young people under 20 years of age.

c. Establishing more supply depots to make services more available:

Services in the insertion of IUDs, prescription of oral pills, distribution of condoms, and operation for male and female sterilizations will continue to be provided by public medical care institutions and contracted hospitals and clinics. In addition, more supply depots for oral pills and condoms will be set up in the communities. Health service desks

will also be set up in some household registration offices to make available timely family planning education and service to the people.

d. Promotion of sterilization:

- 1) In addition to the sterilization services provided by the public and private hospitals, services will also be made available to people in the remote areas.
- 2) Training of physicians providing sterilization services will be conducted to improve their skills hoping to upgrade their quality of service.
- 3) To encourage the acceptance of sterilization, members of low-income families and persons with undesirable genetic diseases will be financially subsidized for sterilization operations.

2. Strengthening genetic health service network

- a. Plan for a comprehensive genetic health service network will be drafted based on the existing health and medical care network to improve the facilities of some priority hospitals and to help them allocate more full-time professionals.
- b. Supervision of the existing genetic health counseling centers will be strengthened. New genetic health counseling centers will be set up in the middle, southern and eastern parts of the island pending upon local needs and local development. For the long-term need, a permanent organization with adequate fundings and staff will be set up to serve as a center for the entire genetic health service network to conduct demonstration, teaching, and research as well as testing and treatment of cases referred by other medical care institutions.
- c. Health manpower at the local level will be consolidated to set up follow-up and management systems in the communities for suspected genetic disorders and positive cases.
- d. Regular meetings of the genetic health counseling committee will be

held to solicit suggestions of experts and scholars for the planning of genetic health services.

3. Provision of comprehensive genetic health services

- a. Provision to the public consistent and comprehensive genetic health services:
 - 1) pre-marital health examination: pre-marital health examination will be made available to both men and women. For those who are likely to produce deformed or genetically disordered offsprings, counseling on contraception or sterilization will be provided.
 - 2) pre-natal genetic diagnosis: for pregnant women of high risk groups who are more likely to produce congenitally deformed children, pre-natal genetic diagnosis by ultrasound, amniocentesis, and CVS will be made available to check whether the fetus is normal. When the fetus is confirmed to be abnormal, with the consent of the spouse, induced abortion will be recommended. (For deformed newborns, clinical diagnosis and biochemical testing of chromosomes will be made to confirm the pathogens and to study and follow-up their family members for a period at the same time.)
 - 3) screening of newborns: all newborns will be blood-screened to early discover congenital metabolic, blood, or endocrine disorders for early treatment and health management.
 - 4) genetic health examination: genetic health examination will be made available to special groups with genetic disorders (mentally retarded children, psychiatric patients) or individuals who are likely to suffer from special genetic diseases (Mediterranean anemia, hemophilia) and their family members to take early action to control the transmission of genetic diseases.
 - 5) genetic counseling: genetic counseling will be provided to those abnormal cases identified through various genetic health services and their family members on necessary genetic information and

recommendations of the risks involved in having congenitally deformed children in order to control transmission of genetic diseases.

- b. Principles for handling genetically disordered cases identified through the genetic health service systems will be drafted and periodically evaluated.
- c. Funds will be made available to subsidize expenses for genetic health medical care to encourage people to accept genetic health services.

4. Provision of induced abortion

- a. Counseling and service in induced abortion will be made available in accordance with the provisions of the Genetic Health Law.
- b. Qualified physicians will be authorized to perform induced abortion and sterilization.
 - 1) Applications of physicians for the authorization to perform induced abortion and sterilization services will be reviewed.
 - 2) Physicians authorized for performing induced abortion and sterilization services will be registered and supervised.
 - 3) Both the Genetic Health Law and the Regulations Governing the Authorization of Physicians for Performing Induced Abortion and Sterilization Services will be amended from time to time.
- c. Counseling before and after induced abortion will be made available to avoid unnecessary operation to protect the health of individuals.
- d. Funds will be made available to subsidize expenses for induced abortion to avoid the births of genetically disordered children.
- e. A monitoring system on induced abortion will be set up to collect information through case-reporting and surveys to understand the characteristics of women undergoing induced abortion, the acceptance of

induced abortion, mortality rates of both mothers and babies, to prevent the abuse of induced abortion, and to reduce some preventable complications of induced abortion.

5. Establishment of monitoring system on quality of service

- a. Surveys of comments on the quality of service provided will be made through family planning telephone lines and questionnaires for the evaluation and improvement of the quality of service.
- b. Items related to the satisfaction on services provided and types of services requested will be included in the 7th Fertility KAP Survey.
- c. Regular follow-up visits will be made to cases accepted for service to understand the incidence of accidental pregnancy, discontinuation of use and side effects.
- d. The quality of laboratory testings in cellular and bio-chemical genetics in medical care institutions offering genetic health services will be controlled periodically to improve the quality of service.
- e. Manuals for the diagnosis, treatment and follow-up of various genetic health services will be prepared to standardize the operation procedures.

6. Strengthening of services and education to special groups

- a. The youths:
 - 1) Medical care counseling, childbearing guidance, contraceptive and induced abortion services will be offered to the youths.
 - 2) Educational activities on marriage, sex and population matters will be organized for the youths through various channels to improve their understanding of and to help them develop desirable attitude toward sex, family, marriage and childbearing.

- 3) Subject matters concerning population, family planning and genetic health will be incorporated in the existing curricula of schools at various levels. Educational activities on population matters will also be organized for both teachers and students.
 - 4) Educational activities on population matters, family planning and genetic health will be promoted in factories, vocational training centers and industrial and commercial organizations for their young workers. 25 family planning education workers in factories for Taiwan Province and 2 for the city will continue to be employed during the program period to help young workers develop adequate knowledge and attitude toward marriage and fertility in order to avoid early marriage and childbearing.
 - 5) Workshops on health of the youths will be organized for school teachers, social workers and medical care personnel to develop and promote programs related to the health of the youths.
- b. The infertile couples:
- 1) Law on Artificial Fertility will be formulated to prevent the abuse of the techniques of artificial fertility and to meet the needs of the infertile couples.
 - 2) Medical care system for infertile couples will be developed to provide high-quality service to the infertile couples.
 - 3) Counseling, referral and follow-up services will be made available to infertile couples based on their wishes, and physical, mental and economic conditions.
- c. The disabled:
- 1) Educational activities and educational materials will be developed for the deaf-mutes, the mentally retarded persons, psychiatric patients and their family members.
 - 2) Training programs will be organized for staff members of the educational institutions for the blinds, deaf-mutes and the mentally retarded persons to help them organize educational activities in the

institutions.

- 3) Counseling, referral and follow-up services on child-bearing and genetic health will be made available to the disabled persons based on their wishes, and their physical, mental and economic conditions.
- 4) Counseling, referral and follow-up services on child-bearing and genetic health will also be made available to family members of psychiatric patients.

d. People in remote and high-fertility areas and other special groups:

- 1) Services and educational activities on population, family planning and genetic health will continue to be provided to people in remote and high-fertility areas.
- 2) Subject matters concerning population, family planning and genetic health will be integrated into the training curricula of new army draftees, students of military academies and the army reserves to encourage more involvement of the males in matters of population and family planning.
- 3) Fertility counseling, referral and follow-up of members of low-income families will be conducted.

7. Strengthening of educational activities

a. On family life:

- 1) the establishment of a harmonious family, understanding the cycles of family life;
- 2) the importance of parent education and the breast-feeding of children;
- 3) care and health promotion of the aged;
- 4) inter-relation between sexes.

b. On planned parenthood:

- 1) to advocate child-bearing at proper ages, to reduce early marriage and child-bearing, pre-marital pregnancy, late marriage and late child-bearing;

- 2) two-children are just enough;
- 3) birth-spacing;
- 4) correct use of contraceptive methods;
- 5) knowing infertility.

c. On genetic health:

- 1) meaning of genetic health and ways to prevent congenital deformities;
- 2) genetic health services, its contents (pre-marital and genetic health examination, genetic counseling, pre-natal genetic diagnosis, and screening of newborns for congenital metabolic disorders) and its systems;
- 3) knowing some common genetic diseases;
- 4) knowing induced abortion.

8. Developing professional workers for family planning and genetic health

- a. Regular workshops and seminars on health and medical care will be organized for health and medical care workers, social workers, school teachers, voluntary workers, military training officers and others to improve their knowledge and skills in population matters, family planning and genetic health. Key staff members will be sent to participate in international conferences as well.
- b. Training opportunities will be made available either in-country or abroad for administrators in family planning and genetic health programs, clinical geneticists, counseling workers in clinical genetics, physicians in pre-natal genetic diagnosis, and laboratory technicians in cellular and bio-chemical genetics.
- c. Education departments will be requested to create courses in universities and colleges on genetic counseling, cellular and biochemical genetics and medical genetics, and sometime later, research institutes on genetics to develop professionals in genetics. Collaborative programs

with foreign universities for training programs in genetics will also be developed.

- d. Educational materials on population, family planning, sex education, and genetic health will be developed, produced or purchased from abroad.

9. Strengthening of evaluation and research

- a. Evaluation, research and experimental studies on population and family planning will be conducted.
 - 1) The growth of population and the fertility and family status of Taiwan Area will be periodically assessed.
 - 2) Fertility survey will be conducted.
 - 3) Research and development of contraceptive supplies and devices will be conducted:
 - (a) to conduct experiments on new contraceptive methods;
 - (b) to analyze and compare the cost-effectiveness of accepting different contraceptive methods;
 - (c) to compare the rates of continuing use of different contraceptive methods;
 - (d) to study the preference of contraceptive methods.
 - 4) Promotional approaches and service system to special groups will be studied.
 - 5) Research related to induced abortion will be conducted:
 - (a) to conduct periodical status survey of induced abortion;
 - (b) to study the effect of induced abortion on population, health and genetics;
 - (c) to study the causes of maternal death after the legalization of induced abortion.
 - 6) Studies on the effect of population transition on health and medical care needs will be conducted.

- b. Evaluation, research and experimental studies on genetic health will be conducted.
 - 1) Periodical surveys of the knowledge, attitude and practice (KAP) of the public will be conducted.
 - 2) The quality and the coverage of various genetic health services will be evaluated.
 - 3) The cost-effectiveness of various genetic health services will be studied.
 - 4) The functions of the genetic health counseling centers will be analyzed.
 - 5) The acceptance of various genetic health services will be periodically assessed. A data base will be set up.
 - 6) The relationship between environmental pollution and genetic health will be studied.
- c. Research and development related to genetic health will be conducted.
 - 1) Monitoring systems on congenitally deformed children will be set up. Children of congenital heart diseases will be registered for management.
 - 2) Studies on the occurrence and causes of genetic diseases among Chinese population will be conducted.
 - 3) Experimental projects on the provision of clinical genetic health service to special groups (retarded children, disabled children, hemophilia patients, and Mediterranean anemic patients) will be conducted.
 - 4) Screening methods, treatment and special diets for congenital metabolic disorders of children will be developed.
 - 5) Methods for the pre-natal diagnosis of genetic disorders will be developed.
 - 6) Baseline data on the types and incidences of genetic diseases specific to Chinese population will be set up.
 - 7) The cause-effect relation between environmental factors and congenital deformities will be investigated.

10. Strengthening international exchange and cooperation

- a. International conferences on population, family planning and genetic health will be organized for the exchanges of experiences.
- b. Experts from US CDC (US Centers for Disease Control) will be invited to help set up monitoring systems on induced abortion and to strengthen the monitoring systems on congenitally deformed children.
- c. Experts from Europe, USA and Japan will be invited to help promote and evaluate the population and family planning program and the genetic health program, and to help develop professional manpower.
- d. Key staff will be sent abroad to study program activities related to population, family planning and genetic health, and to exchange information with other countries.
- e. Participation in international conferences on population, family planning and genetic health will be encouraged to learn about the development in family planning and genetic health, and to present, at the same time, to international communities Taiwan's progress in family planning and genetic health to upgrade our status in international communities.

11. Assisting in the screening of adult diseases and in the promotion of educational programs on the control of hepatitis B.

The existing family planning service network will be used to:

- a. conduct screening, referral and follow-up of hypertensive and diabetic patients through blood-pressure taking and urine-testing (for urine sugar and urine protein) of population above the age of 40 years;
- b. conduct educational activities on the prevention and control of hypertension, diabetes and hepatitis B.

12. Establishment of an institute on population and health

A task group was formed in the Department in 1989 to draft a plan

for the establishment of an institute of population and health. The draft plan will be reviewed for further action.

13. Promoting diversified and flexible services

- a. Diversified promotional approaches such as home-visiting, mailing, correspondence, telephone lines (15 telephone line workers for Taiwan Province and 2 for the city will continue to be employed during the program period), group education and mass media will be flexibly used depending on local situations.
- b. Working hours of field workers will be adjusted to meet the need of the public to improve the efficiency.
- c. The assistance of mass media, various community resources and related organizations will be solicited to promote the program jointly.

C. Program Operation and Management Aspect

1. Contraceptive services

a. Target

In the past, the primary objective of the family planning program in Taiwan was to reduce fertility through the practice of contraception and contraceptive targets were set up as a guide for several mid-term programs for the intensive promotion of contraception (Sun and Chang, 1990). After the implementation of the new family planning program, contraceptive target was therefore modified. Starting August 1990, sterilization target was set up only for members of low-income families and persons with undesirable genetic diseases. During August 1990-June 1991, for instance, a target of 270 vasectomies and 3,692 tubal ligations free of charge was set for Taiwan Province, and was distributed to 21 cities/counties proportional

to the number of sterilization acceptors over time in each locality – a rough indicator showing proportion of low-income families in each city/county realizing that people of low social-economic status are more likely to accept sterilization.

On the other hand, the target system is kept for other government program methods including IUDs (loop, Ota ring, Cu-T, and Multiload), oral contraceptive pills, and condoms. The reason of keeping the target system is not for the intensive promotion of family planning program as to reduce fertility further, but for information feedback through which quality of contraceptive services can be checked and improved. Because of such considerations, the size of target has been reduced.

Table 3 displays the comparison of 1991 and 1992 targets by contraceptive methods in Taiwan Province. The target for IUDs decreased from 121,437 cases in FY 1990 to 109,166 cases in FY 1991, a reduction of 10%. Similarly, the target for pills was reduced from 739,076 to 689,018 cycles during the same period. These total contraceptive targets were divided into 21 cities/counties proportional to the number of married women aged 15-29 of each city or county. Such reductions in the

**Table 3. Contraceptive Targets for Taiwan Province,
July 1, 1989 – June 30, 1991**

Methods	July 1, 1989 to June 30, 1990	July 1, 1990 to June 30, 1991
IUD (Cases)	121,437	109,166
Oral pill (Cycles)	729,076	689,018
Condom (Dozens)	1,094,247	1,377,753
Sterilization		
Male	1,746	493
Female	33,950	7,033

contraceptive targets allow more time for fieldworkers to devote in the new family planning activities.

b. Contraceptive provision

The contraceptive methods provided by the government program are IUD's (Lippes Loop, Ota ring, and Copper T), oral contraceptive pills, condom and sterilization operations. The chronological development of these contraceptive methods and the fee charged for the provision of these services are listed below:

- July 1964, the program started with the provision of Lippes loop through contracted public and private clinics. A fee of NT\$60 was charged for each insertion, of which a half was paid by the patient and a half by the government.
- January 1967, oral contraceptive pill was made available to women who had used Lippes loop previously. One cycle was provided to new acceptors and 3 cycles at refilling. Service charge was NT\$10 per cycle.
- May 1970, condom was made available with a service charge of NT\$1 per dozen.
- May 1973, male and female sterilization operations were added to the program as a part of "eradication of poverty program" launched by the Taiwan Provincial Government. They were provided free to the acceptors but operation fees of NT\$600 for vasectomy and NT\$1,200 for tubal ligation were paid to the contracted doctors by the Planned Parenthood Association of China (currently the Maternal and Child Health Association of China).
- January 1975, Ota ring was provided in the program with an insertion fee of NT\$130, of which NT\$80 was subsidized by the government.
- October 1982, Copper T was included in the program as per request of the public, and was provided through public clinics, with a service fee of NT\$300.

In the course of program development, charges or fee for contraceptive services have changed several times due to various reasons such as higher costs, better quality and so on. These changes are summarized in Table 4.

Table 4. Changes in Fees or Service Charges of Contraceptive Services in Taiwan Area, ROC

Type of Services	Period of time	Fee or charge (NT\$)		
		Total	Patient	Government
Lippes loop	1964. 7.- 1975. 1.	60	30	30
	1975. 1.-	80 (Free at public clinics)	30	50
Ota ring	1975. 1.-	130	80	50
Cu-T	1982.10.-	100	100	50-80
Multiload	1987. 9.-	250	200 (at private clinics)	50
		350	300 (at public clinics)	50
		450	400 (at private clinics)	50
				-
Pills (per cycle)	1967. 1.- 1970.11.	10	10	-
	1970.11.- 1972. 1.	5	5	-
	1972. 1.- 1981. 8.	10	10	-
	1981. 8.-	20	20	-
Vasectomy	1963. 5.- 1976. 7.	...	...	600

**Table 4. changes in Fees or Service Charges of
Contraceptive Services in Taiwan Area, ROC (Continued)**

Type of Services	Period of time	Fee or charge (NT\$)		
		Total	Patient	Government
	1976. 7.- 1984. 7.	...	...	500-700
	1984. 7.- 1990. 7.	800	-	800
		...	...	500
	1990. 8.-	1,500	-	1,500
Vasectomy	1973. 5.- 1976. 7.	...	...	1,200
Tubal ligation	1976. 7.- 1984. 7.	...	...	1,000-2,000
	(public clinics)	1,500	-	1,500
	-(private clinics)			
Condom	1984. 7.- 1990. 7.	...	...	800
(per dozen)	1990. 8.-	4,500	-	4,500
	1973. 7.- 1974. 7.	2.5	2.5	-
	1974. 7.- 1981. 8.	5	5	-
	1981. 8.- 1985. 2.	10	10	10
	1985. 2.-	15	15	-

It should be noted that the government has only subsidized low-income families and persons with undesirable genetic diseases for male or female sterilizations after the implementation of the new family planning program. Also, Copper T services are not only available to people in the remote areas, they are now offered to them free in the new program.

2. Role and Function of Field Workers

The program employs about 500 full-time female family planning field workers to motivate people in townships. Before the implementation of the new

family planning program, they spent about 20 days per month visiting homes with eligible couples, whose names are obtained from the household registration offices, to educate and motivate them to practice family planning. This is the most basic and effective approach from the beginning of the program and is still very effective in rural areas. They have recruited about 60% of acceptors this way. At the beginning of the program, the target couples were those with three or more children with at least one boy, and have shifted to younger couples and even unmarried adolescents recently. In addition, screening for hypertension and diabetes has been included in their regular home visits since October 1988.

After the implementation of the new family planning program in July 1991, field workers have been instructed to strengthen services and education to special groups such as the youth, the infertile couples, the disabled, people in remote and high-fertility areas, and low-income families as mentioned earlier. With the exception of the youth, "face-to-face" approach is still the main method of educating and motivating special groups. Information about special groups is obtained from household records, social workers, village leaders, clinics etc. Work procedures are similar to those adopted in the past program.

It should be noted that some family planning field workers with formal nursing training have been integrated into the primary health service program to provide prevention and community-based health care in some townships, especially in rural and remote areas with group practice centers. These family planning field workers are responsible, in addition to family planning, for maternal-child health and chronic disease control (hypertension and diabetes mellitus) as public health nurses in townships.

3. Program Management System

Although the new family planning program has changed its program emphases, the existing network for contraceptive services, supervision, information feedback, and evaluation is kept for the new program. They have been reported in detail in the proceedings of the previous two workshops and need not be recounted (Sun, 1987; Sun and Chang, 1990). However, some changes must be

mentioned briefly.

As indicated previously, prior to fertility transition, the primary objective of the family planning program in Taiwan was to reduce fertility through the practice of contraception. Program target in terms of various contraceptive methods served as an intermediated variable to achieve fertility goal. The area or individual performance was evaluated through coupon system by comparing the contraceptive target with actual acceptors. After the implementation of the new family planning program, the contraceptive target is mainly used to obtain feedback information to improve the quality of contraceptive services. Therefore, only a part of the achievement is credited in the new program.

On the other hand, the new program focuses more on special groups such as the mentally retarded, the psychiatric patients and their family members, teenagers, low-status women, and people in remote and high-fertility areas etc. It is difficult to set up a contraceptive target for these special groups. As such, a monthly target of 15 special cases is set for each family planning field worker. More specifically, targets for special groups are set up considering the workload of local manpower.

Another important change in the program operation is that city/county health bureaus are now asked to submit to the Institute work plans including IE & C activities for the young and other special groups and ways to integrate the new family planning targets into their health programs. Once the proposal is approved, evaluation is undertaken mainly on the basis of the plan at the city/county level. During January-June 1991, the performance of each city/county is evaluated on the following criteria:

- (1) Case findings of special groups 15
- (2) Special cases requiring care and follow-up 15
- (3) General IE & C activities 25
- (4) Contraceptive services 30
- (5) Others including the accomplishment of the original
plan, execution of required follow-up of IUD cases,

and whether or not to take infertile couples into the action program, etc.	15
Total score	100

Of contraceptive services, more credits are given to the special cases emphasized in the new program. The performance is evaluated by using the coupon and reporting system, and case record as well.

D. New Family Planning and Reasonable Population Growth

As indicated previously, Taiwan's new population policy is aiming at pursuing a reasonable population growth in the future by pushing the NRR up to the replacement level in 2026 through nonincentive measures. It is hoped that the youth program in the new family planning activities can play an important role to achieve this goal. In this regard, delayed marriage for young generations can be checked through educational activities on marriage, sex, and population matters for the youths through various channels to improve their understanding of and to help them develop desirable attitude toward sex, family, marriage and childbearing. Also, educational activities will help young generations develop a norm of moderate family size. If such educational efforts are successful, the NRR will be gradually brought up to one in the future.

IV. CONCLUDING REMARKS

Taiwan's net reproduction rate has been below-replacement fertility level since 1984. Along with the fertility transition, the nature of population problems in Taiwan is shifting from fertility and family planning to aging and other issue associated with low fertility.

What is the role of family planning program now that its demographic goals have been reached? In July 1990, the new family planning program was implemented with emphasis on social welfare goals. Essentially, the major

objectives of the new program are to encourage people to practice family planning, and to accept services in genetic health with a hope to keep population growing at a reasonable rate, to reduce the occurrence of congenital deformities, to improve family happiness and to upgrade the quality of population. Also, the program has continued to participate in the detection of chronic diseases of the elderly so as to realize the idea of happy family.

Using the existing networks of contraceptive services, supervision, information feedback, and field operation, program measures have been carried out in the Taiwan Province. Results are still being evaluated and will provide a direction to improve the program.

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CHAPTER 2. FAMILY PLANNING INTEGRATION

POLICY IMPLICATION OF FAMILY PLANNING INTEGRATION WITH
MATERNAL AND CHILD HEALTH PROGRAM OF KOREA

.....*Moon-Sik Hong*

POLICY IMPLICATION OF FAMILY PLANNING INTEGRATION WITH MATERNAL AND CHILD HEALTH PROGRAM OF KOREA

*Moon Sik Hong**

I. INTRODUCTION

A. Justification of the Study

Promotion of family planning in Korea to reduce population growth rate was a major objective of the long-term plan of the government population policy from its inception in early 1960s until 1980s.

Thanks to the strong population control policies by the government, the contraceptive practice rate for eligible married women aged 15-44 increased from 9 percent in 1964 to 77.1 percent in 1988. Accordingly, the total fertility rate (TFR) declined from 6.0 in early 1960 to 1.6 in 1987 which is at a similar level of the TFR of the developed countries. As a result, current increase rate of population per annum is less than 1.0 percent. In other words, the crude birth rate declined from 43.0 in 1960 to 16.5 in 1988 and the crude death rate from 14.6 to 5.8 per thousand people during the same period which means that the natural increase rate has declined from 2.84 percent to 1.07 per cent per annum in the last 28 years.

According to the new projection of population by the government, population growth will be zero percent in 2021 at about 52 million of total population. Considering the current low level of fertility and the future prospects of population change, the direction of the government population policy to

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reduce the increase rate in the past is being changed to quality control from quantity control.

There are distinct clinical contraindications to pregnancy in which family planning is essential in helping prevent the aggravation of existing diseases. In addition, there are many situations that are highly likely to impair health if childbearing is unregulated. An overall picture has emerged showing that large family size, high parity, pregnancy at under 18 or over 35 years of age, short intervals between pregnancies, and abrupt weaning are linked to varying degrees with morbidity and mortality for mother, child, and family. Family planning thus constitutes a vital preventive measure. The impact of childbearing practice on health can also be looked at from the point of view of positive health in which well-being refers to the quality of life. When children are born at optimum times and are wanted, it is more likely that they will be well cared for and that their environment will be conducive to normal growth and development while family members can more easily share an emotionally satisfying relationship that will promote family health.¹⁾

Since the relationship between family planning and MCH is very close, both programs should be basically integrated. Moreover, for the quality control of population, an integration of both programs is a fundamental factor. At this moment of low fertility era in Korea, promotion of integrated program has become a new issue of the policy.

B. Historical Background of the Program in View of Integration

(1) Before family planning program was adopted by the government, a voluntary civic organization started the family planning program first. It was the Planned Parenthood Federation of Korea (PPFK) that was established in 1961 by antecessors from academic field, medical field, local circles, the ladies circles,

1) World Health Organization, Family Planning in Health, WHO Technical Report Series, No.476, 1971.

the press, and the government as well.²⁾

The prospectus for the establishment of PPFK described family planning movement as a public health movement for the improvement of MCH and a physical life improvement movement by economic development as well as a moral rearmament movement to promote responsible parenthood.³⁾

PPFK played a critical role in making the government accept the national family planning program and was responsible for the IE&C support components of the national program, including the operation of family planning clinics and mobile vans in its provincial branch offices. Using the population Council/USAID grant, PPFK organized village level family planning mother's clubs in 9 provincial areas in 1968, resulting by the end of the year in clubs to 16,652 and memberships to 194,617 and later in January 1976, 29,894 clubs with 749,819 members. These mother's clubs provided significant impetus to the promotion of family planning program particularly in rural areas and became PPFK's chief source of pride and asset.⁴⁾ Those activities of the PPFK had very favourable function of coordination with MCH program activities from the beginning.

In November 1961, the Supreme Council of National Reconstruction decided to adopt the national family planning program and authorized the Ministry of Health and Social Affairs (MOHSA) to be responsible for implementing the program to be launched from 1962 as a part of the First 5-Year Economic Development Plan of the government.

From the beginning of the program, family planning was a part of the health program since it was under the control of the MOHSA. In other words,

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- 2) S. B. Lee, "Population Policy Evolution in Korea", presentation paper for Training Workshop on Family Planning Policy and Program Management in Korea, KIPH, 1988.
 - 3) J. M. Yang, Integration of Family Planning Program in Korea, A paper presented at Workshop on Family Planning Policy and Program Management, September 3-15, 1990, Seoul, Korea (mimeo).
 - 4) J. M. Yang and G. C. Worth, "Mothers' Clubs in Korea," Population and Family Planning in Republic of Korea, Vol. II, Korea Institute for Family Planning, 1974.

the program was implemented by the health authorities and service system was organized through the nationwide health center network.

Most services are provided through the government network of health centers and designated private practitioners. This system was established at the beginning of the program in 1962 by adding two nurse/midwives as family planning workers to the staff of existing health centers throughout the country. Later in 1964, 1,473 township level family planning field workers were assigned after two weeks' training. However, similar number of MCH and tuberculosis field workers was assigned at health-network separately.

In MOHSA, the family planning program was a part of activities in the MCH Division of the Bureau of Public Health, but field program was separated from MCH and carried out independently since the workers were assigned separately. In other words, family planning program has been implemented independently without close connection or coordination with other health programs in its actual activities.

In 1982, the government took an action to merge those three types of health workers (family planning, MCH, and TB) into multipurpose health workers providing all primary health services in addition to family planning, MCH, and tuberculosis programs for a successful integration. However, there has been no evidence of successful integration between family planning and MCH programs as well as family planning and tuberculosis or MCH and tuberculosis programs.

II . CLARIFICATION OF INTEGRATION ISSUE

A. Definition

Special attention has long been placed on the family planning program

integration with other activities especially MCH program. However, interest or concern alone is not a success of integrated program since it needs actual efforts to the implementation of integrated program.

Integration used to be defined very often as structural combination of two organization units into one. According to this definition, integration is different from coordination or cooperation made between structurally different organizational units. This definition has defect in assumption that if a new integrated structure is provided, the connection process of the special activities is automatically solved. However, the assumption is not realistic in the Korean experience. In other words, integration of activities can not necessarily be made automatically by the structural combination of organizations.⁵⁾

Integration is the making up or composition of a whole by adding together or combining the separate parts or elements, according to the Oxford Dictionary. When applied to the integration of family planning with health and other development activities, the basic meaning of integration is the bringing together of specialized and differentiated units or activities into a single or more coordinated whole set of activities. Stated more explicitly, integration implies interactive linkages between specialized activities.⁶⁾

B. Rationale

Fertility is a very close interrelation between MCH and family planning. It has become a common sense that integrated programs are potentially more effective and efficient than single purpose programs in which delivery services are separated. For instance, a delivery system using multipurpose health workers to provide both family planning and health services such as MCH or

5) K. C. Ahn, "Organizational Aspect of Integration" , Family Planning and Agricultural Supervisory Program Integration, Planned Parenthood Federation of Korea, 1977 (Korean).

6) S. Bang, "Review of FP/Health Integration Efforts and Evaluation Results in Korea", presentation paper for Training Workshop on Family Planning Policy and Program Management in Korea, Korea Institute for Population and Health, 1988.

tuberculosis should require fewer worker-client contacts and less worker time and should be less costly per person assisted than the delivery of these same services separately.⁷⁾

A greater and easier accessibility by program field workers to the target population at risk by the integrated program activities of family planning and MCH is the most evident conceptual hypothesis.

Actually, many potential advantages result from providing family planning through the system of MCH care. Health workers with multipurpose functions have many advantages in family planning work through their opportunities to introduce the subject and services in the context of relevant activities such as prenatal, postnatal, and post-abortion care, infant and child care and immunization. Fieldworkers not only have access to people at such critical period, but are also capable of establishing intimate rapport that is so important in dealing with problems related to reproduction.⁸⁾

III . ANALYSIS OF CURRENT STATUS

A. Organization

1. Central level

Since initiation of the national family planning program under the jurisdiction of the Ministry of Health and Social Affairs through the government health delivery system in 1962, the government family planning organization in the Ministry of Health and Social Affairs has been developed.

In June 1963, MCH Team was organized in the Public Health Division to

7) B. F. Y. Johnston and A. J. Mayer, Nutrition, Health, and Population in Strategies for Rural Development, Economic Development and Cultural Change, 1977.

8) World Health Organization, "Family Planning in Health Services", WHO Technical Report Series. No. 476, 1971.

carry out family planning program and it was promoted to MCH Division in December 1963 which includes Family Planning Section and MCH Section. Later in 1970, Family Planning Section was promoted to Family Planning Division separated from MCH Section, and Family Planning Division, MCH Division, and Nutrition Division came under a new Bureau separated from the Bureau of Public Health. In November 1981, however, Family Planning and MCH Division were combined into a Family Health Division under the Bureau of Public Health according to the reorganization. Since 1981, Family Planning Division including Family Planning Section, MCH Section, and Budgeting Section has been maintained without any more change so far. In terms of integration of family planning program with MCH program, structural setting at the central level is well organized.

2. Field level

In 1962, family planning clinics were established in 183 health centers throughout the country by assigning two nurse/midwives to each health center. In 1964, family planning section was established in every city and provincial government and a township family planning field worker was assigned to each of 1,473 Eup/Myon⁹⁾ establishing health subcenter where MCH and TB workers were added. In addition, thousands of designated clinics, PPFK clinics in each provincial branch office, and provincial mobile clinics are unique organization for clinical contraceptive services in the field.

Following the change of the division's name for family planning program in the Ministry of Health and Social Affairs, the name of the section in the provincial governments, health centers has also been changed, but there is no difference in its function. These field level organizations have also very close functional and structural systems between family planning and MCH programs.

B. Manpower and Training

9) Eup/Myon is administrative unit of township with about 10,000-20,000 population under a rural county.

During the initial stage of the program in 1962-1963, the government recruited and trained about 380 nurse-midwives to work at county and city health centers as family planning workers. In 1964, it was realized that this number was insufficient to meet the program goal and additional lay workers were hired to work at the township level health subcenters as assistants to the health center workers. The total number of these township workers was 1,315, and most of them were high school graduates. Later in 1967, MCH and TB field workers were assigned to each health subcenter. All of these field workers, status was temporary, but they were upgraded to regular health officials in 1981.

Training program for these workers to become integrated health personnels was developed and training was conducted in 1982 in order to utilize the workers more efficiently for multipurpose activities. Finally in 1985, the name of field workers was unified as public health workers for multipurpose activities including family planning, MCH and TB programs. In addition, over 2,000 physicians designated by the government for clinical services have been trained since early 1960s in methods of vasectomy, tubectomy and IUD before designation. These clinical workers are also a good source of manpower for family planning and MCH integrated activities.

Another important source of manpower contributed to the program is family planning mother's clubs which were organized throughout the country by PPFK since 1968. Over 25 thousand of the clubs have served as additional distribution points for pills and condoms. Again, a total of 240 information officers was employed by PPFK at health center level to assist field activities of contraceptive services.

C. Services

Most of the services are provided through the government network of health centers and designated private physicians. This system was established at the beginning of the national program in early 1960s. Through this network, targets for contraceptive acceptors by methods are given from central to local level. In

other words, targets are allocated from central to provincial government, from province to county level and again to township level where field workers are stationed.

Field workers distribute oral pills and condoms directly to the clients while they refer IUD and sterilization acceptors recruited by them to the designated physicians who have been trained and authorized by the government. These physicians provide services at their own facilities and are reimbursed by the government on per case basis. Accordingly, vasectomy, tubectomy, and IUD services from the clinics are provided to the clients at free charge while the pills and condoms are distributed at a nominal charge.

Since most contraceptives such as pills, condoms, jellies, and foams are manufactured locally, they are available in the markets. Over 80 percent of the pill and condom users purchase contraceptives from commercial sectors in spite of easy availability from the government network at lower cost.

From the beginning of the national family planning program, IUD was the principal method for female until 1976 at which time laparoscopic tubectomy was introduced to the program. Considering the popularity of the female sterilization, emphasis of the government program has been placed on the female sterilization since 1976. Therefore, out of the 77.1 percent of current contraceptive users among eligible couple, 37.2 percent is female sterilization users while the other methods are 11.0 percent for male sterilization, 6.7 percent for IUD, 2.8 percent for pill, 10.1 percent for condom and 9.9 percent for other methods.

IV . EXPERIENCE IN INTEGRATION

A. Efforts in Administration of Integration

As shown in the previous chapter, the attempt to make the unipurpose field workers for each family planning, MCH, and TB as multipurpose workers was one of the biggest issues in the program management among public health professionals for integration. Those in favour of the unipurpose worker took account their insufficient training background and poor competence and their high dropout rate. Those advocating multipurpose workers considered that each worker's target population would be reduced to one third of total if the three (FP, MCH, TB) field workers were converted to a multipurpose worker. For the efficient utilization of field workers for MCH and family planning programs, the government has attempted to make several policy changes in organization, personnel, and resource allocation as the following examples.¹⁰⁾

- (1) From 1978, inservice training courses started to convert the three kinds of unipurpose field workers to multipurpose workers.
- (2) Change of field workers' status from temporary to regular government officials in 1981 is an effort to improve the family planning program as well as MCH and TB programs as described before.
- (3) Establishment of a new Family Health Division in the Bureau of Public Health, Ministry of Health and Social Affairs in 1981 is also a direct and important approach to improve program integration through structural change.
- (4) Korea Institute for Family Planning and Korean Health Development Institute were merged into a new research institute of Korea Institute for Population and Health in 1981.
- (5) The previously meager resource allocation and budget for MCH program increased drastically in 1980s as the government agreed to obtain \$39 million loan from World Bank Population Fund to build 90 MCH centers for the improvement of both MCH and family planning programs.
- (6) A manual for integrated health program activities was developed in 1985 to promote integrated services of family planning, MCH, and tuberculosis in the field.

10) J. M. Yang, op. cit.

B. Status of Integrated Activities

As it was mentioned, field workers' status was changed from temporary to regular government officials in 1981 in order to utilize them as multipurpose workers for family planning, maternal and child health and tuberculosis programs. However, until the manual for field workers' integrated health program activities was developed in July 1985, no integration has been made in the field among the three major programs.

1. Summary of manual for field workers' integrated activities

a. Time and scope of integration

Primary target of integration is to utilize family planning, MCH, and TB workers as multipurpose at township level and integrated activities were initiated on July 1, 1985. On the other hand, at the health center level, similar integration can be adopted by each health center authority according to respective local situation.

b. Reallocation and training of field workers

Office of the township field workers should be in the health subcenter and reallocation of workers can be made by the provincial governor and county chief. Training of workers should be completed by the end of May 1985.

c. Strengthening of facilities

A room for clinical and counselling activities should be provided in each health subcenter and following equipment should be provided in health subcenter: sphygmomanometer, stethoscope, clinical thermometer, scale, glycoprotein urine test, BCG-kit, footrule, sterilizer.

d. Program target and area

Working area should be divided into 2-3 according to the number of workers and one worker is assigned to one area to cover family planning,

MCH and TB programs. Accordingly, target allocated to the worker should be adjusted.

e. Activities of worker

Field worker should provide monthly plan of activities and it should be approved one week prior to the month. In the plan, basic allocation of time should be: two-thirds of home visiting and one-third at subcenter clinic. In addition, at least two days of MCH clinic service every month should be provided and during the workers' stay at the clinic, services should be provided for every visiting client regardless of their assigned areas.

f. Recording and reporting

Without any change in reporting, items of family planning and MCH are combined together and TB is the same as before, and all other recording and reporting are same as before.

g. Program contents

Family Planning : Recruitment of new clients, care for contraceptive users , management of clinical contraception, follow-up services of contraceptive acceptors for side effect care, services for premarital counselling and infertility;

MCH: Prenatal care, postnatal care, counselling on delivery, infant care services, immunization, care of the handicaps

TB : BCG vaccination, case finding services, registration of patients and treatment care

Health education and family health care.

2. Integrated program operation

In order to maximize the effect of integrated health program of family planning, MCH and tuberculosis control, integration of program management and operation system should be made in advance and manual for activities, and

training of the workers should also be provided. If these conditions are not satisfied, no effects of program integration can be expected.

In the organizational aspect, family planning and MCH program were dealt by the same division or section at every level of organization from central to the field. However, these two programs have been planned, operated and evaluated separately, and TB program has been dealt by a separate division at both central and provincial levels. Even at the health center level, each program has been operated separately in spite of the fact that these programs are dealt by the same section.¹¹⁾

According to a survey¹²⁾ held in July 1990 by KIHASA, field workers' functions are not well integrated as shown in the following Table. In other words, health workers' functions are being separated into three parts of family planning, tuberculosis, and MCH services in 83 health centers while they are separated

Table. Status of Field Workers's Utilization

Utilization of field workers	Urban health center	Rural health center	Total (%)
Seperate into 3 fields (FP, MCH, TB)	60	23	83 (40.3)
Seperate into family health (FP/MCH) and TB	39	62	101 (49.0)
Full integration of 3 fields	2	15	17 (8.3)
Others		5	5 (2.4)
Total	101	105	206 (100.0)

11) Nam Hoon Cho, "Utilization of Health Workers for Family Planning Program", Study on Improvement of Family Planning Program Operation, KIHASA, 1990.

12) Eung Suk Kim, S. H. Lee, and J. M. Park, Study on Improvement of the Korean National Family Planning Program Management, KIHASA, 1990, pp. 113-114.

into two parts of family planning/MCH and tuberculosis in 101 health centers, and the functions are fully integrated only in 17 health centers out of 206 health centers surveyed.

Recording and reporting forms used in the health centers are separately managed for each program. To provide effective health services to the people on family basis, all information related to the health of each family member should be recorded in a unified form and managed intensively.

Also the information recorded should be effectively utilized for monthly report, evaluation, supervision so as to economize time and effort used in recording and reporting.

C. Efforts in Studies for Integration

There have been some efforts to study the integration of family planning with other programs in Korea. They are family planning-nutrition-parasite control program by PPFK in collaboration with JOICFP¹³⁾ during 1977-1985,¹⁴⁾ an experimental study on the integration of family planning and health care with community development program for Incheon area in 1983 by Yonsei University,¹⁵⁾ an evaluative study on organizational determinants of integrating family planning in the New Village Movement by Seoul National University as a part of ESCAP-Korea/Malaysia study in 1979,¹⁶⁾ and a case study on family planning/MCH integration in Soesan area.¹⁷⁾

13) JOICFP: Japanese Organization for International Cooperation in Family Planning.

14) Planned Parenthood Federation of Korea, A Summary Report on Korean Integrated Project, Steering Committee for the Korea Integrated Project, PPFK, 1987.

15) K. C. Ahn, et al., An Experimental Study on the Integration of Family Planning and Health Care with the Community Development Program, Institute of Population and Health Service Research, Yonsei University. 1983.

16) H. Yu and K. W. Kim, A Study on the Organizational Determinants of Family Planning Program Performance : Evaluation of Integrated Family Planning Program in ESCAP Region (Korean Case), Graduate School of Public Administration, Seoul National University, 1979.

17) S. Bang, et al., "An Intervention Study on Intergration of Family Planning and Maternal/Infant Care Services in Rural Korea", Journal of Preventive Medicine, Vol. 20, No. 1, 1987.

However, the Soesan Project by Soonchonhyang University is the only case study for family planning/MCH integration. As shown before, efforts for integration of family planning with MCH have been made on the organization and manpower of the program. Notwithstanding these efforts made by the government, there have been no evident improvement in the actual integration of functions for the field activities.

D. A Case Study on Family Planning/MCH Integration: Soesan Project¹⁸⁾

The project entitled "Baseline Studies and Evaluation of Health Benefits Attributable to an Integrated Family Planning & Maternal/Infant Care Services in Rural Korea, 1981-1984" was the only comprehensive demonstration study project for FP & MCH Program in Korea. This project was a service-cum-research effort with a quasi-experimental study design developed to examine the health benefit of an integrated FP/MCH approach that provides crucial factors missing in the present on-going programs.

An active intervention program was conducted for a 2-year period from June 1982-July 1984 in Soesan County and "before and after" surveys were conducted to measure the changes.

A major service input was the establishment of midwifery services in the existing health delivery system with emphasis on Nurse/Midwife's role as the link between health workers (nurse aids) and village health workers, and the referral of risk patients to the private physician (OB/GYN specialist). An evaluation survey was made in August 1984 to assess the effectiveness of this alternative integrated approach in the study areas in comparison with the control areas which had normal government services.

Based on the experience in operation and findings by the evaluation,

18) This part is mostly quoted from the paper of S. Bang, "Review of FP/Health Integration Efforts and Evaluation Result in Korea," paper for Training Workshop on Family Planning Policy and Program Management in Korea, 1988.

lessons learned from the Seosan Project are introduced as follows :

- (1) As a majority, or about 80 % of the couples, are now practicing FP, as indicated by the study, there is a growing demand from clients for the health system to provide more MCH services than FP in order to maintain the achieved small size of family through FP practice. It is fortunate to see that the government is now formulating a MCH policy for the year 2000 and revising MCH laws and regulations to emphasize more MCH care for achieving a small size family through family planning practice.
- (2) Goal consensus in FP/MCH should be made among health workers and administrators, especially to emphasize the need of care of "wanted" child. But, there is a long way to go to realize the "real" integration of FP into MCH in Korea, unless there is a structural integration of FP/MCH because a categorical FP is still first priority to reduce the rate of population growth for economic reasons but not yet for health/welfare reasons.
- (3) There should be more financial allocation: (i) a midwife should be made available to help promote MCH program and coordinate services; (ii) there should be a health subcenter director who can provide leadership training for managing the integrated program.
- (4) Need of management training for middle level health personnel is more acute as the Government has already constructed 90 MCH centers attached to the County Health Center but without adequate manpower, facilities, and guidelines for integrating the work of both FP and MCH. There is a need for "organizational support", if the decision of integration is made to obtain benefit from both FP and MCH. In other words, costs should be paid equally to both FP/MCH (or any health services). The integration slogan itself, without the commitment of paying such costs, is powerless to advocate it.
- (5) Local governments still consider these MCH centers only as delivery centers to take care only of those visiting maternity cases. The MCH center should be a center for the management of all pregnancies occurring in the community and the promotion of FP with a systematic

and effective linkage of resources available in the county such as Village Health Worker-Community Health Practitioner-Health Sub-Center Physicians and Health Workers, Doctors and Midwives in MCH Center-OB/GYN specialists in clinics and hospitals as practiced by the Seosan Project at the primary health care level.

V. FUTURE DIRECTIONS

It has been more than a decade since integration of family planning program with MCH program became an interesting issue in the national population and health policy. However, actual integration of both programs has not improved as much as expected.

At the service delivery level in the field, integration is not effectively made in spite of considerable efforts made to the programs by the government. In early 1980s, a structural integration of the government organization by establishing Family Health Division in the Ministry of Health and Social Affairs was made to deal with family planning and MCH programs simultaneously at one division, and also the unipurpose family planning and MCH as well as TB field workers were converted to multipurpose health workers through additional training to them.

Comparing the desire and need of integration of family planning with MCH programs, efforts placed on the actual issues are not satisfactory. Therefore, there are still requirements to strengthen the integrated activities and to solve problems.

Even though family planning program has been successful in terms of quantity control of population, it has been very weak in the quality control such as service improvement for correct use of contraception to prevent contraceptive failure which brings unwanted pregnancies and induced abortion. Side effects by contraceptive use and other health problems of mothers can also be reduced if

quality of services is improved. Therefore, future program should be directed toward integration of family planning with MCH program on the basis of family health promotion in order to enhance the quality of program as well as the efficiency of the program.

First of all, field workers should be active in the integrated program activities with best understanding of the nature and importance of the program. So far, most field workers are not manifested with their responsibilities on integrated program of family planning with MCH program or other programs, since no clear manual nor instruction for their detailed job description has been provided in the program.

As the workload of contraceptive supply given to the field workers by target allocation system is being reduced gradually, their activities are more flexible in the program. On the other hand, if there is no specific job assignment of integrated program for the workers, many of them would become loose minded in their program activities.

As mentioned, field workers' function is multipurpose for health programs especially for family health promotion including family planning and MCH. Therefore, if they are not given a clarified job assignment in family planning and MCH services, they are likely to neglect to contact with target population for counselling and supervision. In order to make these workers concentrate on the integrated program activities more effectively, a systematic and comprehensive description of their job assignment to meet their function for the program should be clearly developed and instructed. Since the field workers' responsibility is not merely for family planning and MCH but for other health programs such as TB and primary health care etc., a development of working manual should be made by every program division concerned of the Ministry of Health and Social Affairs. On the other hand, a new basic training program should also be prepared to improve workers' quality. In addition, since the administrators as well as the workers are not well trained in managing integrated programs, a management workshop is necessary to delineate the common goals

and objectives of an integrated program to enhance understanding of meaning and value of each area of family planning and MCH and to clarify each worker's role.

Another important part of the program approach is the unification or integration of recording and reporting forms, and the development of program management information system. Administrative organization and field workers' function were formally integrated in early 1980s, but recording and reporting forms of the field programs have been maintained as they were before without modification for integrated activities or for management information system. For the field program, a new development of these forms in accordance with the job description should be made as early as possible. In addition, a computerized management information system should be developed in the near future. It is understood that the Ministry of Health and Social Affairs has a plan to computerize all health centers by 1995 and health subcenters by 1999 for the purpose of collecting accurate raw data from the lowest level in a timely manner and improving the efficiency of center operation. Demonstration project of computerized information services for both rural and urban health centers has been attempted by the Korea Institute for Health and Social Affairs already. In order to cope with the computerized information system in the field, a special training program for both field administrator and workers should be organized gradually.

Finally, one of the important factors to promote field activities is monetary invest to the program.¹⁹⁾ Since new programs and new approaches should mean more expansion of administrative structures, more jobs, more payments, and power for a growing corps of administrative personnel, cost must be paid, in any case, for the benefit of the integrated program. In this point of view, the budget saved by the reduction of government support for direct cost of contraception should be put into the service for quality improvement such as family health

19) S. Bang, "Integrated Approaches for Development Programs: Danger and Prospects", Report of an Integrated Approach Local Rural Development, Makati, Philippines, edit. M. Campbell, IDRC-651e, 1975.

education activities, training of field workers as well as administrators, and strengthening of IE&C to enhance public understanding of family health. Since 1988, multimillion dollars of contraceptive supply cost by the government have been reduced every year, but there has been no increase of budget for the quality improvement of the family health programs.

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CHAPTER 3. HEALTH OF THE ELDERLY

HEALTH AND LIVING STATUS OF THE ELDERLY IN KOREA

.....*Mee Kyung Suh*

HEALTH AND LIVING STATUS OF THE ELDERLY POPULATION IN KOREA

*Mee Kyung Suh**

I. INTRODUCTION

Amid rapid economic growth and social change, Korean elderly people have been subjected to various patterns of new life situations which require both social and individual adaptation efforts. Demographically, the growth rate of the elderly population far exceeded that of the total population, and the proportion of the elderly population among the total population grew from 3.3 percent in 1970 to 3.9 percent in 1980 (Economic Planning Board or EPB, 1971, 1981) to 5.1 percent in 1990 (National Statistical Office or NSO, 1991). The same proportion will continue to increase, and one out of every ten Koreans will be elderly approximately by 2010 (Korea Institute for Consumer Protection or KICP, 1991).

In addition to such demographic changes, the quality of elderly people's life has also been significantly affected. In particular, the mental well-being of the elderly has been threatened by new life patterns and different bases for social relationships. For instance, the National Institute for Psychiatric Treatment reported that the number of aged psychiatric patients has abruptly increased since 1975 (Kim, C., 1982). The senile psychoses causing such an increase include organic brain disorders, alcoholism, and chronic depression. A noticeable characteristic shared by the aged mentally ill was that they had commonly experienced stressful life events closely related to the modern way of life. Dissolution of the traditional inclusive relations system was deemed the most critical aspect of such experiences (Kim, C., 1982). Since industrialization tends to induce a family system suitable for non-familial economic activities (vis-a-vis

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inclusive social support for family members), the aged gradually face unfavorable circumstances for satisfying various social and physical needs. Due to the prospect of diminishing social support, the mental well-being of the aged has become a serious social concern in Korea, in particular because the proportion and size of the aged population has rapidly grown (Kim, C., 1982; Lee, J. et al., 1984).

This social concern will be addressed in this paper by examining the current socio-demographic profile, social support status and mental and physical health status of the elderly in Korea. Let me first describe some of the key parameters regarding the status and conditions of the Korean elderly in terms of demographic and social status, economic well-being, support from family, relationship with friends, and physical and mental health status; second, summarize the causal relationship between health status and social support of the aged with an analytical focus on the so-called "buffering effect" of social support against the stressful life situations (such as physical illness); and finally, describe current welfare policies and programs for the elderly in Korea. While the overall purpose of this paper is to provide a general account of the health and living status of the rapidly increasing Korean elderly population, a particular effort will be made to specifically discuss the mental health effects of various social and economic conditions surrounding the elderly population. In this increasingly affluent society, the elderly's welfare will be meaningfully analyzed only when sufficient attention is paid to the actual subjective consequences of the social and economic conditions of the elderly's life, and this aspect should be incorporated in any serious policy measures.

II. CURRENT STATUS OF THE ELDERLY POPULATION IN KOREA

A. Demographic and Economic Profile of the Elderly Population in Korea

Demographic status Between 1985 and 1990, the elderly population (aged 65 and over) grew at an annual average rate of 5.5 percent, while the

Table 1. Aging of the Korean Population (1960-2020)

Year	Total population	65 years and over		Dependency ratio (%)			Index of aging (%)	Life expectancy at birth	
	Average annual growth rate (Last 5 years)	Average annual growth rate	of total population (%)	Total	Aged 0-14 years	Aged 65+ years		Male	Female
1960	-	-	3.3	86.0	79.9	6.1	7.7	51.1	57.3
1966	2.7	2.7	3.3	87.9	81.7	6.2	7.6	54.9	61.0
1970	1.9	2.0	3.3	83.3	77.2	6.1	7.8	57.2	64.1
1975	2.0	3.0	3.5	71.1	65.2	5.9	9.1	59.8	66.7
1980	1.5	3.7	3.9	60.5	54.3	6.2	11.4	62.7	69.1
1985	1.8	3.8	4.3	52.4	45.9	6.5	14.3	64.9	71.3
1990	1.3	5.5	5.1	43.9	36.5	7.4	20.1	67.1	73.6
1995	0.9	3.7	5.7	40.6	32.6	8.0	24.5	68.2	75.0
2000	0.9	4.9	6.8	38.8	29.4	9.4	31.9	69.3	76.2
2005	0.7	5.0	8.2	39.8	28.4	11.4	40.2	69.8	76.8
2010	0.5	3.4	9.4	39.9	26.8	13.1	49.1	70.3	77.0
2015	0.3	2.7	10.7	39.3	24.3	15.0	61.5	70.8	77.0
2020	0.1	3.4	12.5	39.9	22.4	17.5	78.2	71.3	77.0

Notes: • Data from 1960 to 1990 are census data.

• Data from 2000 to 2020 are estimated data.

Sources: 1) EPB, 1960, 1966, 1970, 1975, 1980, 1985 Population & Housing Census

2) NSO, Advanced Report of 1990 Population & Housing Census

3) p.10 in Choe, Ehn-Hyun, 1989, Population Aging in the Republic of Korea, Asian Population Studies Series, No. 97

4) pp. 31-33, in Korea Institute for Consumer Protection, 1991, The Consumption Indicators in Korea

growth rate of the total population was only 1.3 percent (NSO, 1991). The difference is expected to continue, at least in the foreseeable future. According to a recent estimation, the annual average rates of growth for the elderly and the total population between 1990 and 1995 will be 3.7 percent and 0.9 percent, respectively. Between 1995 and 2000, the corresponding rates will be 4.9 percent and 0.9 percent. Consequently, the proportion of the elderly population grew from 4.3 percent in 1985 (EPB, 1986) to 5.1 percent in 1990 (NSO, 1991), and is predicted to be 6.8 percent in 2000 and 12.5 percent in 2020 (KICP, 1991).

Although the increase in the proportion of the aged is largely due to the decrease in the birth rate, the sustained increase in life expectancy is also a significant factor which will further expand its importance in the coming years. Life expectancy at birth in 1985 was 71.3 for females and 64.9 for males, and it is expected to be 76.2 for females and 69.3 for males in 2000 (Choe, 1989). While the increased life expectancy itself is an important indicator of the elderly's welfare, the extended life span for each elderly person requires more and more familial and social resources to be spent on elderly care.

Among other demographic characteristics of the elderly population, sex ratio (females=100) in 1990 was 75.49 for the aged 60 to 64 years, 71.45 for the aged 65 to 69 years, 54.78 for the aged 70 to 74 and 43.49 for the aged 75 and over (NSO, 1991). Concerning the marital status as of 1990, among female elderly, 51.97 percent of the aged 60 to 64, 39.08 percent of the aged 65 to 69, 26.10 percent of the aged 70 to 74, and 12.92 percent of the aged 75 and over were married (NSO, 1991). Among male elderly, in a sharp contrast to females, 92.73 percent of the aged 60 to 64, 89.98 percent of the aged 65 to 69, 84.33 percent of the aged 70 to 74, and 69.76 percent of the aged 75 and over were married as of 1990 (NSO, 1991). Since it is females who comprise the majority of the elderly population, we may safely say that the marital status of the average elderly person in Korea is problematic.

Social status and labor participation It is somewhat difficult to systematically estimate the income of elderly people or that of households with

Table 2. Sources and Satisfaction Levels of Pocket Expenses for the Aged

Pocket Expenses	City of Seoul ¹⁾	Gallup ²⁾
Source		
Self provided	39.1	31.4
Children	58.6	68.5
Self + Children	1.7	-
Others	0.6	-
Satisfaction Level		
Plenty	22.3	-
Manageable	26.8	-
Deficient	50.9	-
Others	-	-
Total	100.0	100.0
(N)	(2,401)	(1,200)
Average pocket expenses/per month (U.S. dollar)		59.0

Source : 1) pp. 58-63 in City of Seoul, 1989, A Study on Social Welfare Development for the Elderly in Korea

2) p.98-99 in Korea Gallup, 1990, Life Style and Value System of the Aged in Korea

elderly members in Korea, because of the importance of self-employment in agriculture, seasonal variations in income, the unmonetized economy, and the difficulty in separating out the elderly's personal income from family income. In general, most of the aged are financially dependent on the family income. In a survey of Korean elderly, more than half of the respondents reported that family members are an important source of income (Martin, 1988: S104). According to Koo (1986), only 28 percent of elderly men and 10 percent of elderly women live independently on their own income. According to the report of the City of Seoul (1989), 58.6 percent of the elderly population lean on the living support from their family members, whereas 39.1 percent are financially independent and 1.7 percent partially family supported. These results are in contrast with that of

the western elderly. About 70 percent of the elderly in developed countries use pension benefits and social securities for their living (Korea Gallup, 1990). Subjective feelings about financial situation is low, as 50.9 percent of the elderly reported they are not satisfied about their pocket expenses. Their feelings may not sound unreasonable. According to a national survey conducted in 1990 by Korea Gallup, an elderly person's average monthly pocket expenses were only about 59 U.S. dollars.

Table 3. Employed Persons by Occupation in 1989 (Aged 60 & Over)

	All	Male	Female
Pro., Tech & Related Workers	4.4	5.9	2.3
Adm. & Managerial Workers	1.0	1.8	-
Clerical & Related Workers	1.3	2.3	0.2
Sales Workers	11.8	11.3	12.3
Service Workers	6.6	4.7	9.1
Agri. & Forestry Workers & Fisherman	62.7	63.9	61.1
Production & Related Workers, Transport Equipment Operators & Laborers	12.2	10.1	15.0
Total (N)	100.0 (1,196)	100.0 (657)	100.0 (540)

Source : p.63 in Ministry of Labour, 1990, Yearbook of Labour Statistics

Table 4. Level of Education in 1990 (Aged 60 & over)

	All	Male	Female
Primary School Graduate & Under	85.0	71.4	93.8
Middle School Graduates	6.6	12.8	2.7
High school Graduates	5.8	9.9	3.1
College, University Graduates & Over	2.6	5.9	0.4
Total (N)	100.0 (3,415,031)	100.0 (1,346,419)	100.0 (2,068,612)

Source : pp. 51-53 in National Statistical Office, 1991, Advanced Report of 1990 Population & Housing Census

The employment rate of the elderly has increased from 25.7 percent in 1970 to 28.4 percent in 1980 to 39.7 percent in 1989 (EPB, 1971, 1981; Ministry of Labor, 1990). However, most of the elderly are self-employed – in particular, 62.7 percent of them (63.9% of male and 61.1% of female) were either family farmers, forestry workers or fishermen in 1989. These patterns of elderly employment are deemed significantly related to the generally low levels of education received by the elderly population. In 1990, eighty-five percent of the elderly were primary school graduated or had education levels lower than that. There are significant gender differences in the level of education. The educational level of 93.8 percent of the female elderly was primary school or lower, whereas 71.4 percent of the male elderly had such low levels of education.

B. Social Support Systems for the Elderly in Korea

Living arrangement and family support Regarding the elderly's residence, while 74.45 percent of the whole population lived in urban areas, only 54.95 percent of the aged people (60 and over) were urban residents in 1990 (NSO, 1991). As the heavy rural-to-urban migration since the 1960s principally involved the young population, about half of the elderly population is still accounted for in rural areas, and this proportion is not expected to decline too

**Table 5. Proportions of Elderly Households and Populations
(Aged 60 & over)**

	1985	1988
Households with Elderly Person(s)/ Total Households	26.3	22.3
Households with Elderly Person(s) Only/ Total Households	4.1	5.2
Households with Elderly Person(s) Only/ Households with Elderly Person(s)	20.5	22.9
Elderly Population/Total Population	6.8	7.1
Elderly Population Living by Themselves/ Total Population	1.7	1.9
Elderly Population Living by Themselves/ Elderly Population	22.6	24.7

Source : p.59 in Lee et al., 1990, A Study on Structural Characteristics of Households With the Elderly, KIPH.

rapidly in the near future. Thus, sufficient attention needs to be paid to the particular social and economic conditions of the rural elderly population (although the limited scope of this paper does not allow to do so here).

In the 1980s, the rapid increase of young people-headed nuclear households has been responsible for the declining proportion of the households with elderly person(s). For instance, two nation-wide surveys in combine show that the proportion of the households with elderly person(s) decreased from 26.3 percent in 1985 to 22.6 percent in 1988. (However, the absolute number of the households with elderly person(s) increased during the same period.) Despite this trend, the proportion of the households with elderly person(s) only rather grew from 4.1 percent in 1985 to 5.2 percent in 1988. In the same token, the proportion of the elderly who live by themselves increased from 22.6 percent in 1985 to 24.7 percent in 1988. For a significant and increasing proportion of the Korean elderly population, as these statistics show, the traditional sources of social support for the elderly mainly provided by the cohabiting children are not taken for granted any more.

Table 6. Distribution of Households with Elderly Living by Themselves in 1988 (Aged 60 & over)

	Elderly Population Living by Themselves	Household With Elderly Only
All	24.7	22.9
Big Cities	15.9	14.7
Mid-sized Cities	18.4	17.0
Countries	32.8	30.9
(N)	(4,837)	(3,577)

Source : p.44, 46 in Lee et al, 1989, A Study of the Living Conditions of the Elderly Only House

Table 6 shows that the proportion of the elderly living by themselves in 1988 was particularly high in counties or rural areas (i.e., 32.8 percent) and

lowest in big cities (i.e. 15.9 percent). In the same respect, the proportion of the households with elderly person(s) only out of the total households with elderly person(s) was highest in rural areas (i.e., 30.9 percent) and lowest in big cities (i.e, 14.7 percent). These statistics show that rural elderly, who could easily be considered to enjoy the traditional patterns of filial support in the agrarian social context, in fact confront higher possibilities of becoming entirely separated from children and thus have to support themselves.

The process of rapid industrialization in Korea has brought about drastic changes to the basic life patterns of the elderly population. The importance of social support for elderly people is directly linked to the transformation of the traditional large, extended family system into a nuclear family system. Under the new highly mobile and non-domestic economic activity-oriented family system, family members cannot ensure the necessary total support, from nutrition to affection, for the aged (Lee and Song, 1972; Kim, C., 1982; Park, 1985). Social and academic attention has been directed to the role of social support in two ways. First, friends and voluntary associations have been recognized as important social support institutions which may supplement what the family is unable or less able to do. Second, and more significantly, the role of the family for supporting the aged is no longer taken for granted.

Although more often now than before the elderly lean on friends to solve emotional difficulties and participate in social activities to diversify their life, they are still primarily supported by their children in economic, emotional, and other areas (Kim, T., 1981; Park, 1985). They still express more satisfaction from contact with family members (You, 1980) and show higher levels of mental well-being when living with their family (Lee, J. et al., 1984). Not only the living arrangement but also the quality of interaction is related to the mental well-being of the aged person. Those aged people who have less conflict with family members show lower levels of perceived loneliness, anxiety, and pessimism (Leem, et al., 1985).

There are, however, changed and resultant conflicts in the family support.

The elderly gradually perceive uneasiness in demanding and receiving instrumental and affectional social support. Both aspects interact in a complex manner. The reason for the elderly's preference for living with the eldest son lies not necessarily in subjective comfort in interaction with him but often in economic consideration and the social norm concerning living arrangements. By the social norm, the elderly feel satisfaction by the very fact of living with the eldest son, regardless of the nature of interaction with him or his wife. Economic consideration comes from the situation that most of the property owned by the elderly parents is given to the eldest son, who in turn is usually the first child who becomes economically established (Kim, T., 1981; Cowgill, 1986).

However, these social and economic reasons alone do not secure the mental well-being of the elderly living with the eldest son unless affectional support is also exchanged (Leem, et al., 1985). T. Kim (1981) describes findings about the conflict between economic and emotional concerns: the aged living with the eldest son are most satisfied with economic support, but least satisfied with emotional support, whereas the aged living with a married daughter express the highest satisfaction with emotional support but the least satisfaction with economic support. In addition to the decline in the affectional component of family support, the weakening of the social norm for the eldest son's support for his parents posits an increasingly worrisome element in elderly people's life.

A similarly problematic trend might be easily expected concerning the instrumental and economic support for the elderly by the family. However, it needs to be emphasized that actual evidence in this regard is still fairly scarce. The main reasons perhaps include, on the one hand, the traditional absence of financial division between aged parents and cohabiting children and, on the other hand, the still relatively low level of economic development of Korea as compared to that of the U.S. or other developed countries. The former is a direct consequence of the primogeniture system; the latter is a cause of the economic incapacity of the aged and the low level of social security. Given these conditions, the family still appears almost the exclusive institution for economic and social support for the Korean elderly.

Support from friends and participation in social activities

Aged people

in Korea spend most of their time staying at home. Although an increasing number of the aged participate in social activities through senior citizen centers, senior citizen schools, village or block meetings, voluntary associations, and informal friendship networks (Korea Gallup, 1990; Leem, et al., 1985), the majority of the elderly still spend most of their time at home. A survey of the aged in the Seoul area reported more than half of the elderly women (79.4 percent) and about half of the elderly men (48.7 percent) usually spent time at home reading, watching television, taking care of grandchildren and so on; only 20.2 percent of the elderly women and 51.3 percent of the elderly men spent time outside of the house attending senior citizen centers, senior citizen schools and visiting the homes of friends or married children (Lee, H., 1979). Informal social activities usually take place among friends, so friends are deemed a central component of the elderly's nonkin support network. Beside friends, the increasing function of senior citizen centers as social support institutions is being acknowledged, and the central and local governments have provided some financial and administrative support for building senior citizen centers.

**Table 7. Types of Social Activities for the Elderly
(Among Regular Participants)**

	Gallup		
	All	Male	Female
Political Activities	1.3	2.1	0.7
Hobby Clubs	3.6	6.7	0.8
Informal Social Activities (Social Gatherings)	15.2	23.8	7.4
Religious Activities	22.4	16.8	28.3
Senior Citizen Centers	14.3	25.8	3.8
Educational Activities	2.5	2.5	2.4
Voluntary Activities	6.0	9.0	3.3
Sports Activities	3.3	6.1	0.7

Source : Korea Gallup, 1990, Life Style and Value System of the Aged in Korea, p.216

The likelihood of joining social activities through senior citizen centers or other institutions varies according to economic status and gender. Men in general and the financially stable elderly, according to K. Lee (1987), showed higher interest and actual participation in group activities. A survey by Korea Gallup (1990) also showed that male elderly were more active in participating in group activities. 25.8 percent of the male elderly participate in senior citizen centers; 23.8 percent in informal social activities; 16.8 percent in religious activities. Whereas 28.3 percent of the female elderly participate in religious activities; 7.4 percent in informal social activities; and 3.8 percent in senior citizen centers. Therefore, institutional efforts are encouraged not only to expand scope but also to correct this unevenness between the different social groups of the elderly.

Concerning friendship as a social support institution, its affectional function is deemed particularly important. You (1980) found that friendship enhances aged people's emotional satisfaction. She reported that elderly people preferred to share their loneliness and exchange their emotional problems with peers. Most of them have congenial friends within a walking distance. Interaction between contemporaries who have interests and experiences in common appears to increase emotional understanding more easily than interaction with other age groups.

Social activities through senior citizen centers, senior citizen schools, village meetings, and voluntary associations may provide opportunities for the elderly to enjoy social relations and acquire instrumental services. Accordingly, J. Kim (1986) reported that social activities and educational activities through senior citizen centers and other institutions significantly improved the elderly's life satisfaction. The function or implicit goal of these social activities is usually so diffuse that affectional and instrumental support almost inseparably occur.

C. The Health Status of the Korean Elderly

Mental status of the elderly. In addition to the rising demographic importance of the aged population, the negative impact of the new life patterns

of industrial society on elderly's mental wellbeing has called for increased social attention. There is much evidence for the rapid increase of the elderly neuropsychiatric patients since the 1960s (e.g., Kim, C., 1982). The number of in- and out-patients in neuropsychiatric clinics has increased sharply. It should be taken into account that the aged population has grown more rapidly than the younger population, while neuropsychiatric hospitals have become more accessible, affordable, and perhaps socially acceptable. However, the primary cause of this sharp increase of elderly mental patients is probably due to their new patterns of life imposed under industrialization and urbanization (Kim, C., 1982).

According to many surveys of the aged, the majority of the aged suffer from psychological discomfort of one kind or another. One nationwide survey in 1985 of those aged 60 and over (977 respondents) showed that 63 percent of the men and 48 percent of the women in Seoul and 59 percent of the men and 35 percent of the women in rural areas had cognitive difficulties such as sleep difficulties, worry, loss of interest, depression, fatigue, forgetfulness, hallucinations, and paranoia (Huh and Rhee, 1985). Another study has found that aging causes an increase in loneliness, anxiety, and depression (Lee, J. et al., 1984). In a 1989 survey of 320 elderly patients (60 years and over) visiting public health centers, clinics and hospitals for medical treatment, 53.7 percent of the surveyed reported need for mental support (Rhee and Park, 1990).

In 1981, the National Neuropsychiatric Hospital reported that the prevalent mental illnesses of the elderly were organic brain disorders, alcoholism, and depression. Another clinical study of the 91 elderly inpatients hospitalized between 1975 and 1982 in the Neuropsychiatric Department of National Medical Center reported similar results. In this study, 71.4 percent of the hospitalized elderly suffered from organic brain syndrome and 19.8 percent suffered from involutional depression (Oh, et al., 1983).

There are some differences in the likelihood of mental illness based on sex and other social characteristics of the elderly. Female elderly tend to report higher life satisfaction than male elderly (Kim, J., 1986). A study (using Zung's

self-rating depression scale) of 339 male elderly and 522 female elderly in Seoul and Tague during the period from October 1983 to June 1984 reported that female elderly were more likely to complain about their depressive symptoms than male elderly. However, mentally ill male elderly showed more serious depressive levels than their female counterparts.

Also the elderly's education and financial situation, among others, were significantly related to depression scores. Concerning education, the less educated show higher depression and lower life satisfaction than the better educated (Lee, J. et al., 1984; Kim, J. 1986). While the impact of education is sometimes inconsistent, economic conditions seem to be a consistently important (positive) factor for the elderly's mental well-being. Most of the aged do feel economic difficulties, as mentioned already. Poor financial conditions – typically indicated by deficiency in pocket expenses for snacks, cigarettes, drinks, entertainment, transportation, travel, and gifts to children or grandchildren – are observed to cause depression (Lee, J. et al., 1984). In a study by Kwon, et al. (1986), the elderly expressed the belief that financial difficulty is their most stressful concern. This study showed that those elderly who do not have pocket money or who get less than 10,000 won per month (roughly 15.40 U.S. dollars if different levels of prices are not considered) recorded the highest depression score whether they were institutionalized or lived with their family. Although these socioeconomic conditions and demographic characteristics of the elderly are undoubtedly important factors in the notable increase of mental illness in this age group, it is the changes in family structure that appear to have the primary significance for this aspect of the elderly's life.

Physical health status of the elderly Unlike mental well-being, physical health is largely considered to have been substantially enhanced owing to socioeconomic modernization in Korea. Physical health is a crucial element for the elderly's welfare not only for its own significance but also as a determinant of mental well-being (Kim, J., 1986: 159; Lee and Chung, 1985). Much evidence suggests that physical illness is in fact a critical concern for the majority of the elderly. Nonetheless, its improvement is also conspicuously noted in Korean

surveys. In a study of those aged 60 years and over in 1971, 379 men among 1,000 and 424 women among 1,000 reported that they had a disease of some kind (Lee, J. 1982). A nationwide survey of 977 individuals (60 years and over) in 1985 also showed that 54 percent of men and 45 percent of women rated themselves healthy while 40 percent of the respondents reported health problems such as dental problems, visual impairment, and difficulty in walking long distances. The lower level of physical health among the female elderly appears to be either due to the higher proportion of women in the old age groups (women live longer than men) or to some kind of social segregation based on gender with regard to health delivery (women have less access to medical care), or due to both.

Regarding the ability to cope with activities of daily living, a majority of the elderly (including some of the physically ill) appear to be able to take care of daily activities. Huh and Rhee (1985) reported that 71 percent of elderly were able to accomplish all IADL (instrumental activities of daily living, that is, eating, dressing, caring for one's appearance, walking, getting in and out of bed, shopping and handling one's own money and so on).

As shown in Table 8, the disease prevalence rate of the elderly in 1985 were 1.2 to 1.6 times higher than that of the total population. Among the elderly, those aged 75 and over showed rather lower levels of disease prevalence than those aged 55 to 74. This trend was observed for both men and women. Among the aged 55 to 74, female elderly showed higher rates of disease prevalence than male elderly, but among the aged 75 and over, male elderly showed rather higher rates of disease prevalence than female elderly.

Table 8 also shows that the elderly population suffered most from diseases related to the musculoskeletal system and connective tissue, the respiratory system, and the digestive system. There were also gender differences in prevalent diseases. Female elderly in all age groups showed the highest prevalence rate in the disease of the musculoskeletal system and connective tissue; whereas male elderly showed the highest prevalence rate in the disease of the respiratory

Table 8. Disease Patterns of Elderly in Korea (in 1,000 persons)

Categories	All ages	55-64	65-74	75&over
Infectious & Parasitic	5.2	8.3	6.8	5.3
Neoplasms	0.7	2.5	2.1	-
Endocrine, Nutritional & Metabolic & Immunity Disorders	2.5	12.3	4.8	7.1
D. of Blood & Blood Forming Organs	1.7	2.9	4.8	1.8
Mental Disorders	1.2	1.4	0.7	5.3
D. of the Nervous System & Sense Organs	8.5	7.9	13.6	5.3
D. of the Circulatory System	9.8	37.5	42.3	26.6
D. of the Respiratory System	92.7	72.1	82.5	63.7
D. of the Digestive System	38.4	67.4	46.4	28.3
D. of the Genitourinary System	3.5	4.7	3.4	5.3
D. of the Skin & Subcutaneous Tissue	9.8	8.7	6.8	3.5
D. of the Musculoskeletal System & Connective Tissue	32.7	107.4	116.6	93.8
Symptoms, Signs & Ill-Defined Conditions	18.8	29.5	34.1	30.1
Injury & Poisoning	11.7	24.1	22.5	10.6
Total				
All	238.4	386.5	387.5	286.7
Male	216.75	350.3	386.5	299.0
Female	259.95	420.3	388.2	280.3

Source: pp.11-15 in MOHSA 1986, A Survey on Diseases and Accidents in 1985

among the aged 55-74 and in the disease of the musculoskeletal system and connective tissue among the aged 75 and over.

Although modernization as a general path of socioeconomic change is held to enhance the elderly's physical health, two concomitant changes, economic conditions and social support, seem to cause a more complex picture. As mentioned earlier, most of the aged feel some financial difficulties, and also feel that familial social support for them is declining, with no conspicuous substitute emerging. Timely medical treatment and care, needless to say, are much affected

by these factors. While financial problems are expected to improve in the future for the average elderly person (as the Korean economy consistently grows and social security mechanisms are being introduced), social support is a complex issue for the future of the Korean elderly. The following section discusses the details of this complex issue with particular regard to its relation to the elderly's mental well-being.

III . THE RELATIONSHIP BETWEEN SOCIAL SUPPORT AND HEALTH OF THE ELDERLY: THE RESULT OF AN IN-DEPTH ANALYSIS

The preceding overview of Korean elderly's sociodemographic and economic conditions, relationships with family and friends, and mental and physical health suggests that rapid economic development and accompanying social change have ramified much complex problems and pressures on elderly life rather than a mere material affluence. In particular, it is paradoxical that the familial social support system has gradually weakened when its importance for the demographically expanding and psychologically disturbed elderly population is more crucial than ever. On the other hand, the state-financed and/or state-organized public mechanisms for delivering institutional care of the elderly have not been fully developed in any meaningful sense. Under these circumstances, the need for rigorous analysis of the precise health impacts of both kin and nonkin social support for the elderly is enormous, particularly if economically efficient as well as socially acceptable policy measures are to be developed. In the second part of this paper, let me introduce the analytical outcomes of my own survey of Korean elderly's social support and health status.

This study was conducted to examine the impact of social support on the mental well-being and self-reported physical health of Korean elderly and, as a result, find out the target elderly population who are in need of various types of public and individual social support. This survey of 1987 was done as a follow-up on a sample of 102 elderly in Seoul selected for a 1984 nation-wide survey (see Suh, 1989a for details). The 1984 survey was conducted by the KIPH on the

socioeconomic, physical, and psychological living conditions of 3,704 elderly people. In 1987, the 102 elderly people in Seoul were interviewed using a questionnaire which is much more comprehensive than the 1984 KIPH survey in regard to social support, self-reported physical health, and mental well-being.

A. Social Support Network and Self-Reported Physical Health

In contrast to the results of most studies of Western elderly (e.g., Bultena and Oyler, 1971; Berkman and Syme, 1979), social support did not significantly enhance the elderly's self-reported physical health in this study of Korean elderly. That is, only a weak relationship between amount of social support (size of the social support network) and self-reported physical health was found. This result was sustained in the case where all socioeconomic and demographic characteristics were controlled (see Suh, 1989b for detailed patterns of causal relationships). It may be possible that mobilization of social support during crisis situations (Israel, 1985) — illness induces an increase in the elderly's social support network — produced a confounding effect on the weak relationship between social support and self-reported physical health. However, healthier people normally have larger support networks as they can be more socially active and mobile. Also, as the Korean elderly's social support networks mainly consist of kin members, their physical health level may not directly affect the network size. It is implied that a mere amount of social support may not directly influence the elderly's physical health and that more attention has to be paid to the quality or content of the social support delivered in each incident of social support.

Among socio-demographic and economic characteristics, pocket expenses and age were observed to have positive associations with self-reported physical health. Considering the influences of sociodemographic variables on self-reported physical health, a positive relationship between better pocket expenses and better self-reported physical health may well be expected. But a positive relationship between age and self-reported physical health was somewhat unusual, as there was generally an inverse relationship between age and health (Maddox, 1964).

Concerning the age-physical health relationship, one possible explanation lies in an age-based selection of healthy elderly. In other words, persons living longer may do so because of their better health. Also, the male elderly had better health than the female elderly. The finding on the gender-physical health relationship may be in part attributed to the particular culture of Korea, which is highly female-segregative. Considering this social context, the lower level of female elderly's health can be interpreted as an outcome of the sociocultural structure by which males acquire more resources for health services.

When specific components of social support were considered, kin and instrumental networks were observed to be most important for the elderly's self-reported physical health. (Instrumental support refers to the support activities concerning ride, grocery shopping, meal preparation, laundry, daily activities, pocket expenses, financial problems; affectional support refers to the support activities concerning social activities, social events, personal worries, family problems, important personal decisions, friendship.) Further qualification of this finding was allowed by a more detailed specification of social support. When the different impacts of kin-instrumental, kin-affectional, nonkin-instrumental, and nonkin-affectional networks were compared, only the kin-instrumental network was seen as a significant determinant of the elderly's self-reported physical health.

In many studies of the Korean elderly, social support from family and other kin members has been found generally to perform significant instrumental functions. Furthermore, self-reported physical health has been reported to be affected largely by instrumental, rather than by affectional social support. In the same token, the importance of kin-instrumental support for the elderly's self-reported physical health was clearly documented by the data provided in this study. On the other hand, nonkin and/or affectional network of social support proved to be only insignificant in affecting the self-reported physical health of the aged.

B. Main and Buffering Effect of Social Support

Main effect of social support. The findings show that social support by kin had an influence on mental well-being. On the other hand, the significance of nonkin support (which had been extended from U.S. and Western experiences) was normal in Korea. Nonkin support was insignificant in affecting the elderly's mental well-being. Specifically, neither nonkin-instrumental nor nonkin-affectional support generated a noticeable impact on mental well-being. By contrast, the importance of kin support was manifested both in instrumental and affectional ways. Instrumental and affectional support in general seem to have had significant influence on the elderly's mental well-being. When their subcategories were examined, as implied above, only kin-instrumental and kin-affectional supports affected mental well-being. When self-reported physical health was examined as a determinant of the elderly's mental well-being, it also proved to be significant. Its influence was strongly maintained in the models estimated with different social support variables. Among economic and sociodemographic variables, pocket expenses, (or more generally financial difficulty) was observed to affect the elderly's mental well-being. Taking into account that Korea is a not-yet-affluent society which lacks comprehensive social security mechanisms for the growing elderly population, the financial situation is regarded as an essential condition for the psychological health of the aged. Education may also have some effect on the elderly's mental well-being, but that effect was rather indirect through self-reported physical health.

Buffering effect of social support. The next question to be discussed is whether social support, especially when provided by kin members, play a particularly significant role for those elderly who suffer from a difficult life situation caused by poor physical health. In this study of the relations between social support and mental well-being, the critical interest in dealing with self-reported physical health consisted of the interactive mechanism between social support and physical health. This interactive mechanism magnifies the effect of social support on mental well-being for those elderly in poor physical health. This line of analysis was intended to test a "buffering effect" of social support

against psychological distress generated by poor physical health. (The association between self-reported physical health and mental well-being provided a precondition under which the buffering effect of social support against ill health-generated stress could be studied.) For this analysis, the respondents were divided into two groups with low and high levels of physical health, based on the median score of self-reported physical health. An equation which explained

Table 9. High Physical Health Group N=54 : The Impact of Support Network on Overall Mental Well-Being (in terms of OLS Regression Coefficients)

	Intercept	[A] Age (female=1)	Sex	Marry (married=1)	Educ	Econ	[B] SN	Adj R-sqr
[A]	60.238 **	.001	4.539	2.276	1.086	1.954 *		.129 ⁺
[A+B] B:total	63.095 **	-.048	3.580	1.475	.555	2.094 *	.418	.126 ⁺
B:Kin	62.998 **	-.058	3.447	.990	.821	2.271 *	.577	.134 ⁺
B:nkin	60.093 **	.002	4.567	2.254	1.144	1.969 *	-.070	.108 ⁺
B:instr	63.364 **	-.054	3.627	1.330	.824	2.129 *	.470	.127 ⁺
B:affec	61.146 **	-.026	4.181	1.474	.748	1.927 *	.726	.141 ⁺
B:kin- instr	63.070 **	-.050	3.652	1.320	.849	2.148 *	.448	.124 ⁺
B:kin- affec	59.516 **	-.018	4.529	1.134	1.330	2.122 *	.898	.143 ⁺
B:nkin- instr	59.776 **	.064	4.666	2.572	1.063	1.884 *	1.626	.112 ⁺
B:nkin- affec	60.737 **	-.002	4.422	2.316	.908	1.899 *	.243	.109 ⁺

+ p<.10; * p<.05; ** p<.01

Note : [A] represents sociodemographic variables (age, sex, marital status, level of education, pocket expenses);

[B] represents each type of social support network (total support, kin support, nonkin support, instrumental support, affectional support, kin-instrumental support, kin-affectional support, nonkin instrumental support, nonkin-affectional support).

Table 10. Low Physical Health Group N=48 : The Impact of Support Network on Overall Mental Well-Being (in terms of OLS Regression Coefficients).

	Intercept	[A] Age (female=1)	Sex	Marry (married=1)	Educ	Econ	[B] SN	Adj R-sqr
[A]	51.066**	-.113	3.434	4.607	2.092*	3.010**		.334**
[A+B] B:total	48.422**	-.122	2.630	4.825 ⁺	1.903*	2.302**	1.151**	.437**
B:kin	38.402**	.006	1.772	4.586 ⁺	2.624**	2.013**	1.955**	.477**
B:nkin	52.370**	-.141	3.590	4.843 ⁺	1.930 ⁺	2.933**	.650	.355**
B:instr	44.154*	-.067	2.461	5.200 ⁺	2.507**	2.240**	1.658**	.423**
B:affec	47.092**	-.078	3.331	4.774 ⁺	2.025*	2.700**	.790	.350**
B:kin- instr	42.512*	-.043	2.522	5.262 ⁺	2.504**	2.234**	1.644**	.424**
B:kin- affec	43.736*	-.025	3.175	4.504	2.279*	2.718**	1.074	.332**
B:nkin- instr	47.068*	-.056	3.560	4.778	2.094*	2.978**	-3.866	.323**
B:nkin- affec	52.492**	-.142	3.522	4.851 ⁺	1.886 ⁺	2.914**	.794	.340**

+ $p < .10$; * $p < .05$; ** $p < .01$

Note : [A] represents sociodemographic variables (age, sex, marital status, level of education, pocket expenses);

[B] represents each type of social support network (total support, kin support, nonkin support, instrumental support, affectional support, kin-instrumental support, kin-affectional support, nonkin-instrumental support, nonkin-affectional support).

the impact of control variables alone was estimated first, and then the social support variables were put into the equations at different steps.

Tables 9 and 10 display the different effects of social support network on mental well-being between the high and the low physical health groups. For the

physically healthy elderly, the impact of social support network was not observed at all. Thus, the above highlighted role of the kin network for the elderly's mental health, as well as that of the nonkin network, was not borne out among the physically healthier elderly. Among the sociodemographic variables, pocket expenses had a significant effect on mental well-being in all the equations. None of the equations had statistically significant explanatory power (in terms of R-square) at the conventional significant level of .05, although they were significant at the .10 level. In sum, the physically healthy elderly's mental well-being was not much affected by social support or by other sociodemographic variables (except by pocket expenses).

In contrast, the impact of social support network on the mental well-being of the elderly in the low physical health group was largely significant and mirrors what has been observed concerning the entire group of elderly people. The total support network showed a significant impact on mental well-being of the low physical health group, confirming the buffering effect of social support at a general level. Also, the kin, instrumental, and kin-instrumental social support displayed their importance as the core mechanisms of social support in buffering the negative psychological consequences of physical illness, as the corresponding coefficients were all significant for the low physical health group. Among socioeconomic and demographic variables, pocket expenses produced a significant impact on mental well-being in the positive direction. Education was another, though less important, factor which showed a buffering effect. Marital status showed some effect of the same kind, but its statistical significance was hardly tenable. As many factors produced a significant impact on mental well-being, all equations in Table 10 had significant explanatory power (in terms of R-Square) at the .01 of significance.

Considering these two contrasting sets of results with the high and the low physical health groups, a clear documentation of the so-called "buffering effect" of social support was possible. In fact, not only social support, but also pocket expenses, education, and marital status seemed to have some buffering functions in that the latter factors also showed differential impacts on mental well-being

depending on the elderly's self-reported physical health status. The practical implications of these findings will be discussed subsequently when the future directions of the welfare policies for the elderly are presented in view of the current social and economic conditions of the elderly population.

IV. CURRENT WELFARE POLICIES AND PROGRAMS FOR THE ELDERLY

As the basic legal framework for public elderly care, the Korean government enacted the Law of Elderly Welfare in 1961 and the Charter of Respect for the Aged in 1982. These laws have guided many social welfare programs for the elderly to be formulated and implemented. However, the government strategy of, "(economic) growth first, distribution later" in the state-led process of socioeconomic modernization has resulted in the overall neglect of the need for timely and sufficient means for public elderly support. In 1989, only 0.17 percent of the total state budget was used for the social welfare of the elderly. Most of the elderly do not receive benefits from the government-sponsored pension and/or social security systems (which in fact are only recent creations). In this respect, it is even too early to discuss the efficiency of the government welfare programs for the elderly. Let us just briefly examine what programs formally exist. (An indirect answer to the question of what such programs actually do for the elderly has already been presented above in the results of my own analysis of Korean elderly. That is, most Korean elderly people – at least, those surveyed in Seoul - do not, and cannot, rely on extra-familial means for support both in affectional and instrumental dimensions.)

A. General Health and Welfare Systems for the Elderly in Korea.

Health care system for the elderly. In 1989, a medical insurance system for the whole Korean population was put into effect, and the elderly are entitled to the generic health benefits of this new medical insurance system. That is, most elderly people are at least formally eligible for reduced medical costs as Korean citizens. The current medical insurance system is based upon the

Medical Insurance Act for employees of private work places, community residents, and self-employed persons and the Medical Insurance Law for government employees, private school employees, servicemen, and pensioners. Elderly people are eligible for the insurance benefits based upon these legal stipulations either through their own status or through their legal supporters' status.

National pension system. Although 51 percent of the total population are now covered by national pension systems, only 1.2 percent of the elderly population are eligible for pension benefits. Even this minimal pension coverage for the elderly has not long been available. The Korean government prepared some basic policy measures for implementing national pension systems in 1973, but its actual implementation continued to be postponed until 1987. For government officials (from 1960), military personnel (from 1963), and school teachers (from 1974), pension benefits have been available for quite a while, but these groups account for only 6 percent of the national population. From January 1988, industrial workers employed in companies with 10 or more employees began to be compulsorily joined in the new national pension system.

But farmers and fishermen, mostly self-employed, as well as those industrial workers employed in companies with less than 10 employees are not yet covered by the national pension system. Since a majority of the economically active elderly population is employed in agriculture and other types of self-employment, the pension system is not yet any significant means for financially supporting the elderly population. The Korean government has a plan to develop the pension systems for farmers and fishermen during the 7th five-year plan for social and economic development (1992-1996) and for self-employed urban workers during the 8th five-year plan (1997-2001).

Institutional facilities for the elderly. In addition to the nursing homes for ill elderly mentioned above, there were 18,264 senior citizen centers for the elderly (or elderly homes) as of 1990, which were financially supported by the government. The financial support includes 12,000 won (about 17 U.S. dollars) for maintenance expenses each month and 100,000 won (about 140 U.S. dollars)

for fuel expenses in winter. Local communities sometimes provide television sets, VTRs, newspapers, and telephones for the senior citizen centers in their areas. Also in 1990, there were 333 senior citizen schools for the elderly. There were 93 elderly homes as of 1989, in which 6,379 aged (0.3 percent of the elderly aged 65 or over) were accommodated.

Table 11. Welfare Facilities for the Elderly in 1990

	(units : facilities, persons)				
	Elderly home- public/ free	Nursing home- public/ free	Elderly home- public/ subsidized	Nursing home- public/ subsidized	Elderly home- private
Facilities	71	18	1	7	2
Inmates	4,962	1,447	8	114	62

Source : p.23 in Chung, 1991, Policies on the Korean Families in the Welfare
Policies for the Korean Family : The Seminar Report

Concerning the specialized personnel for social services, there are only 782 government-employed social workers in the welfare facilities. Moreover, the wages for these social workers are generally very low and thus seem to fail to attract many qualified and motivated persons.

The government plans to improve the quality as well as coverage of public services in the elderly and nursing homes by remodeling the old facilities, building new structures, and increasing financial assistance. The government also has plan to establish welfare facilities for the middle-class elderly. Finally, the government has offered senior citizens free fares for subways, palaces and museums and discount fares for trains and buses (MOHSA 1990). Despite these developments, it needs to be emphasized, the number and proportion of the elderly accommodated in these welfare facilities are not yet quite high (as partially shown in Table 11) and special treatments and benefits even for eligible elderly are by no means a major source for livelihood.

Elderly job placement and public work. To ease the financial and psychological difficulties of old-age, special employment agencies for the elderly began to be set up from 1981. Since then, some 632,000 elderly have been employed through these agencies. There are 264 such agencies in cities and counties, and their budget is usually supported, though in part, by the government.

As the elderly will increase its proportion in the national population as well as in the national workforce, and as Korea is beginning to enter the stage of chronic labor shortage, efficient job placement for the elderly is important not only for the sake of elderly welfare but also for the productive utilization of the increasingly scarce national workforce. The Korean government plans to introduce a special law for facilitating elderly employment during the 7th five-year plan for social and economic development. This law and other policy guidelines will compulsorily allocate certain jobs (including selling bus tokens and cigarettes, attending parking lots and public parks, etc.) to the elderly only and oblige public and private companies to employ certain proportions of elderly workers. However, the most important obstacle in effective use of the elderly workforce appears to be the currently prevalent practice of compulsorily retiring company employees as early as in the early fifties of age.

Support for families with elderly dependents. In order to uphold the tradition of filial piety and respect for the elderly, the government has rewarded about 340 persons every year in recognition of their pious conducts since 1982. In addition, those who take care of their aged parents are reduced of and/or exempted from inheritance tax (30 million won per person and 90 percent of the housing price) and income tax (480,000 won per year) and eligible for a small amount of governmental monthly allowance (15,000 won) and larger sums of housing loans (additional 2 million won). As suggested above, the assistance to families with elderly dependents has a particular significance since most Korean elderly people still rely on their family members for instrumental (material and physical) as well as psychological matters and since such familial care is the most effective in maintaining their well-being. Recognizing this effectiveness of

the family as the prime elderly care institution as well as the far limited public resources for elderly care, it is indispensable to maintain the will and capacity of the family for elderly care, of course, by developing and improving governmental policy measures to reduce the ensuing material burdens.

B. Public Assistance to the Poor Elderly

Most of the health and welfare benefits examined above, if carefully designed and effectively implemented, will be particularly useful for those elderly in poor economic conditions. But there are also dangers of rather enlarging the social and economic disparities between poor and rich elderly if concerned benefits are actually dispensed through formal sector jobs and formal establishments (to which poor people have less access). There are some special programs specifically designed to serve those elderly in serious social and economic needs. As there is an increasing awareness in the international community that elderly care programs are best used when need-based (rather than simply age-based or formal status-based), more of the special programs for helping the actually needy elderly must be introduced.

Health care system. The health security system, serving those who are poor and handicapped, covers 20.5 percent of the elderly population (MOHSA 1990). Under this system, the government absorbs all medical charges for the persons whose income is below the poverty level and thus cannot bear their own medical expenses. Most of the beneficiaries of this health security system are elderly people. The government provides free health examination for 200,000 elderly people each year. There are 18 public nursing homes nation-wide for those elderly suffering from geriatric disease, and 1,500 persons are now accommodated in these public nursing homes. It is also discussed that more specialized health care institutions for the elderly such as hospitals exclusively serving geriatric patients should be established.

Income maintenance after retirement. In addition to helping elderly people's job placement, the government began to run, since 1986, communal

work operations for providing jobs which fit elderly's aptitude and physical ability. There are currently 212 communal work operations for the elderly, which were located in low income areas, near senior citizen centers and elderly homes, and in the vicinities of industrial complexes. These public communal operations are designed to help poor elderly relieve their financial difficulties.

Since 1991, the government gives the aging allowance of 10,000 won per month to the elderly aged 70 or over who are institutionalized in public facilities such as nursing homes and elderly homes. Also, 4,762 persons, accounting for 70 percent of the total elderly population accommodated in public facilities, are financially supported by private sponsors.

There are 26 cafeterias nation-wide for serving lunch to those elderly who cannot afford lunch. These cafeterias are mostly located near or in public welfare facilities and run by religious groups and voluntary workers.

Home care services. As pointed out above, more and more elderly people are living by themselves, often without any regular care providers. Some 800 social workers are now providing various types of elderly care such as visiting elderly's home, helping laundry, doing dishes, cleaning houses, and giving basic health advice. Of course, those fortunate elderly who receive such assistance and attention account for by far a small proportion of the total elderly in need of such care.

C. Financial Support for the Disabled Elderly

There is no special law for providing financial assistance for disabled elderly, but they are nonetheless eligible for the generic benefits stipulated in the Welfare Law for the Disabled. However, it must be pointed out that the disabled population in general does not seem to draw sufficient social attention or benefit from careful policy measures for relieving various difficulties of the physically and mentally handicapped.

The financial benefits for the disabled include the government-financed pension, various tax reductions (gift tax, inheritance tax, value-added tax), low-interest and long-term bank loans for business, subsidized prices for public utilities, and subsidies for children's educational expenses. The disabled are preferentially treated in allocation of public housing and housing loan, distribution of licenses for selling cigarettes, ginseng, and domestic postal items, etc. Relatively large companies are encouraged to employ disabled persons for 1 to 5 percent of the total personnel.

V. FUTURE GOALS AND DIRECTIONS OF WELFARE POLICIES FOR THE ELDERLY

Social welfare systems for the elderly in general may be improved by upgrading the coverage and benefits of the two basic programs of national social insurance, i.e., medical insurance and old-age pension. Of course, much can be learnt from the experiences of those societies whose populations have earlier undergone aging and which have proceeded to develop various welfare programs for the elderly after valuable trials and errors in policy formulation and implementation. However, besides these general considerations, the particular cultural and economic conditions surrounding Korean elderly as well as Korean society at large seem to require additional efforts to maximize the efficiency of the welfare programs by combining various public and private means of elderly care in such a way as to allocate limited resources for the actually needy elderly.

By and large, the recent social concern about the life of the elderly in Korea revolves around the gradual decline of the extended family as the prime institution for supporting the elderly. The results of my in-depth analysis of Korean elderly's mental and physical health as well as the minimal welfare benefits available for most elderly people, however, signal that most Korean elderly still turn to their families for both instrumental and affectional support. The sustained importance of kin support under rapid socioeconomic modernization not only differentiates the Korean situation from the Western

experience but also suggests a different way of coping with the growing aged population. As in other Asian societies, "the West as a model" (Martin 1988: S109) may not be acceptable at its face value for Korea.

Given the yet preserved tradition of strong and comprehensive familial ties in Korea, the family still appears not only the most important but also the most efficient social institution for supporting the elderly. Hence, every effort should be made to encourage families to continue supporting their elderly. Ultimately, a strong sociocultural tradition may not be a sufficient condition for preserving the social support function of the family. Thus, active governmental policies and social campaigns may have to complement the tradition per se in the elderly care. For example, serious financial support programs such as subsidies and tax redemptions for those families with dependent elderly person(s) need to be developed and expanded in addition to medical insurance and old-age pension.

The sustained significance of kin support for Korean elderly may not present only a fortunate situation for the elderly population and society. It could, in fact, allude to a fundamentally problematic situation, that is, lack of alternative sources of social support for the elderly. In my in-depth analysis, this problem was indirectly shown by the insignificant role of nonkin social support for the elderly's mental and subjective physical well-being. Of course, even a very sketch examination of the currently available welfare benefits for the elderly will reinforce this line of judgment. The support function of the family can be crucial, not only when the sociocultural tradition is strongly maintained, but also when no major alternative sources of social support are available for the elderly. Although the former is largely deemed to be the case, the latter is also an undeniable and increasingly visible reality.

In Korea, comprehensive social security programs for the elderly are not yet available and extra-familial private mechanisms for social support are rare. While kin social support for the elderly needs to be further encouraged, more social and political attention and economic investment should be made to develop complementary, rather than substitutive, mechanisms of social support.

Institutional arrangements for social, cultural, and educational activities including senior day care centers, senior citizen centers and senior citizen schools are such complementary mechanisms. More comprehensive financial support programs for the elderly, such as subsidies and pensions, may be introduced and expanded in the future. But these programs should also be complementary to other available sources of social support.

The emphasis on the complementary nature of the prospective means for social support is congruent with the emphasis on need, rather than age, as the criterion for allocation of resources (Martin 1988:S111). Age-based programs, such as pensions for the elderly in less developed countries, have been criticized as perpetuating an already unequal distribution of income and opportunities. Therefore, social support programs for the elderly should fully reflect the different realities of available kin and nonkin support for the different socioeconomic groups of the elderly in Korea. In other words, social support programs should touch on those who are actually sick, poor, and helpless.

The significant buffering effect of social support (and some socioeconomic factors) as presented in my in-depth analysis of Korean elderly's physical and mental health suggests that a macroeconomic rationality can be derived concerning the need-based social support programs. Since the social and financial resources of the state and individual families are limited, they should be allocated to reflect the actual needs and difficulties of the elderly (in particular concerning health conditions), so that their buffering effects are fully manifested against stressful life events. In this way, the social utility of social support mechanisms, whether public or private, will be maximized. Specifically concerning the particularly significant buffering effect of kin-instrumental support, those families with ill elderly parent(s) or relative(s) must be financially supported in their delivery of material care for the elderly.

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CHAPTER 4. CHANGES IN MARRIAGE, HOUSEHOLD AND FAMILY STRUCTURE

**CHANGES IN MARRIAGE PATTERNS AND FAMILY STRUCTURES IN
KOREA: 1960-1990**

.....*Keywong Cheong*

**CHANGES IN MARRIAGE PATTERNS AND FAMILY STRUCTURES SINCE
1960 IN TAIWAN, ROC**

.....*Li Chi*

CHANGES IN MARRIAGE PATTERNS AND FAMILY STRUCTURES IN KOREA: 1960-1990

*Keywon Cheong**

I. INTRODUCTION

In his presidential address to the Population Association of America, Bumpass (1990: 483) argued that "because fertility cannot be isolated theoretically from the institutional context in which it is embedded, theories about fertility decline are intrinsically also theories about changes in the family as an institution." Marriage constitutes the first step in the formation of the biological family, and a family is the structural unit affecting the aggregate level of fertility. Changes in population affect, and are affected by, the changes in marriage patterns and family structures.

Change in marriage patterns is one of the most important factors in population dynamics as it "affects fertility tremendously and mortality and migration to a lesser extent" (Shryock et al., 1975: 283). The importance of marriage patterns has been stressed in many literatures on their relationship with levels of natural fertility, especially with fertility decline of Western Europe during the pre-industrial time (Matras, 1977: 149; United Nations, 1990: 5). However, the study of marriage and marital status as factors affecting the size and structure of households and families is a comparatively new field of demography, and has been treated relatively little in literature.

The purpose of this study is to examine and evaluate the changes in

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marriage patterns and family structures, and the extents to which they have been relevant to population dynamics in Korea. The changes refer to those in the rates of the married and never-married population, ages at first marriage, and the size and structure of families and households since 1960.

II. POPULATION CHANGES IN KOREA

The past thirty years have witnessed a rapid population change in Korea. As the societies have been undergoing vast and rapid changes with economic growth, modernization and urbanization, and the government has successfully implemented family planning programs, the total fertility rate in Korea has dropped from 6.0 in 1960 to 4.5 in 1970, 2.7 in 1980, and to 2.1, the replacement level in 1984 (Moon et al., 1989: 122). The population growth rate per annum has also been down to 1.0 per cent in 1988, which was 3 per cent in 1960, 2.3 per cent in 1970, and 1.6 per cent in 1980. Now Korea has experienced below-replacement level fertility since 1984. The total fertility rate was 1.6 in 1988. The phenomenon of below-replacement fertility is regarded as a continuation of the declining trend in fertility.

The important population change refers to declines in mortality as well as dramatic reductions in fertility. The greater longevity of the recent birth cohorts as compared with past cohorts has been repeatedly demonstrated in literature on mortality. The estimates of expectation of life at birth were 22.6 years for males and 24.4 years for females at the beginning of this century (Kim, 1990: 45). The figures were estimated at 52.7 years for males and 57.7 years for females in the period of 1960-65. The expectations of life at birth have increased gradually and steadily (59.7 and 64.1 years in 1966, 59.8 and 66.7 years in 1970, and 66.0 and 74.5 years in 1980, for males and females respectively), and reached 66.0 years for males and 74.5 years for females in 1988 (Korea Institute for Health and Social Affairs, hereafter referred to as KIHASA, 1990).

The decline of infant mortality rate is also considered one of technical

indicators of the mortality transition. The estimates of infant mortality were 57.7 per thousand live births for the cohort born during 1955-59, had decreased to 49.7 for the cohort born in 1965-69, to 42.5 for the cohort born in 1970-73 (Kim, 1990: 31), and dropped to 11.9 for the cohort born during the period of 1985-86 (KIHASA, 1990).

The National Bureau of Statistics, Economic Planning Board(1988), in a population projection with an assumption of the continuation of the current state of below-replacement fertility and low mortality, prospects that Korea would face zero-population growth with 50,193 thousands of population size in the year of 2025, and a rapid population decline and thus changes in population structure thereafter.

A rapid urbanization in Korea has also been one of the important changes in population. Urbanization has accompanied modernization, economic growth and social development. The proportion of the population in urban areas has grown steadily, from 28.0 per cent in 1960, to 41.1 per cent in 1970, 48.4 per cent in 1975, 57.3 per cent in 1980, and up to 65.4 per cent in 1985. The preliminary count of the 1990 Population and Housing Census shows that 74.4 per cent of the total population reside in urban areas (National Statistical Office, 1991).

Urban growth rate during the 1960-70 period stood at 5.6 per cent per annum. The paces of urban growth have declined to 4.6 per cent per annum during the period of 1970-80, and to 3.7 per cent during the 1980-85 period. These estimates still present a continuation of urban growth; moreover, the pace of urbanization is relatively rapid, compared to the rates of rural growth (0.2 per cent during 1960-70, -2.3 per cent during 1970-80, and -3.4 per cent during the period of 1980-85).

The rural-to-urban migration is recognized as one of the most important components in the process of urbanization. Lee and Lee (1983) estimated that during the 1966-70 period, about 77 per cent of urban growth could be accounted for by net migration into urban areas. Of the urban growth, the proportions

attributed to net migration were 45.1 per cent in the 1970-75 period, and 39.7 per cent during the period of 1975-80.

III . MARRIAGE PATTERNS

Marriage and marital status have long been recognized to be related to population composition and fertility, and to the size and structure of households and families. Marriage constitutes the first step in the formation of the biological family, which is the structural unit primarily responsible for births. And fertility is the primary determinant of population dynamics.

A. Marital Status

Table 1. Percentage Distribution by Marital Status, for Persons 15 Years Old and Over, by Sex: 1960-1990

Year	(Units: 1,000 persons, %)									
	Male					Female				
	Total (N)	Never- Married	Married	Widowed	Divorced	Total (N)	Never- Married	Married	Widowed	Divorced
1960	7,259	36.4	60.1	3.0	0.6	7,508	22.7	60.7	15.7	0.9
1966	8,117	36.5	62.3	2.7	0.5	8,359	23.0	60.0	16.1	0.8
1970	8,927	37.4	59.8	2.4	0.5	9,266	24.9	59.1	15.2	0.9
1975	10,605	40.7	57.0	1.9	0.3	10,866	28.5	57.1	13.8	0.7
1980	12,209	40.4	57.4	1.9	0.4	12,542	28.7	57.4	12.8	0.6
1985	13,960	39.6	58.4	1.6	0.5	14,356	28.1	58.7	12.5	0.7
1990	16,080	37.6	60.1	1.6	0.7	16,366	27.3	59.2	12.6	0.9

Source: National Bureau of Statistics, *Population and Housing Census Report*, 1960 through 1985. Seoul: National Bureau of Statistics, Economic Planning Board

National Statistical Office, *Advance Report of 1990 Population and Housing Census, based on Two Percent Sample Tabulation*. Seoul: National Statistical Office

Table 1 presents the proportion of marital status groups to the persons

aged 15 years and over, classified by age and sex, and shows the changes in the extent to which people of given ages are married, have failed to marry, or have become widowed or divorced. Changes in the fraction of marital status groups have an important bearing on the size and structure of families and households. For example, a change in the proportion of single persons aged 15 and over affects the total headship rates and thus the average household size (United Nations, 1973: 356).

Of the males 15 years old and over, 36.4 per cent were never married in 1960 and 39.6 per cent were single in 1985. The proportion of single female had increased 5.4 per cent points during the same period, from 22.7 per cent in 1960 to 28.1 per cent by 1985. The preliminary count of the 1990 census shows 37.6 per cent of male and 27.3 per cent of female are never-married, which are lower than the proportion of the singles in 1985. The decrease in the proportion of the never-married during the period of 1985-1990 results from fertility decline and thus the decrease in the ratio of the young population (National Statistical Office, 1991b).

Table 2. Changes in Percent Never-Married, for Persons 25 Years Old and Over, by Age and Sex: 1960-1990

(Unit: %)														
Age	Male							Female						
	1960	1966	1970	1975	1980	1985	1990	1960	1966	1970	1975	1980	1985	1990
25-29	37.3	38.4	43.4	47.0	45.2	50.8	57.3	4.9	7.7	9.7	11.8	14.1	18.4	21.8
30-34	4.7	5.3	6.4	7.0	7.3	9.4	13.7	0.6	1.0	1.4	2.1	2.7	4.3	5.2
35-39	0.9	1.0	1.2	1.4	1.7	2.7	3.9	0.2	0.3	0.5	0.7	1.0	1.6	2.6
40-44	0.3	0.3	0.4	0.5	0.7	1.1	1.5	0.1	0.1	0.2	0.3	0.5	0.7	1.1
45-49	0.2	0.2	0.2	0.3	0.4	0.6	0.9	0.1	0.1	0.1	0.2	0.3	0.4	0.7
50-54	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.1	0.1	0.1	0.2	0.2	0.3	0.5
55-59	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.1	0.1	0.1	0.2	0.2	0.2	0.3
60+	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2

Source: National Bureau of Statistics, *Population and Housing Census Report*, 1960 through 1985. Seoul: National Bureau of Statistics, Economic Planning Board

National Statistical Office, *Advance Tabulation of Two Percent Sample, 1990 Population and Housing Census*. Seoul: National Statistical Office

Without adjusting for changes in the age distribution of population, these figures do not reflect the changes in marriage patterns. Table 2 shows the changes in the propensity to single of persons aged 25 years and over. Among those aged 25-29 the percentages of men and women never married were 37.3 and 4.9 respectively in 1960. There has been a rapid increase in the propensity to be never-married. Of men aged 25-29, 43.4 per cent were never married in 1970, and 57.3 per cent in 1990. The percentages of women never married among those aged 25-29 reached 9.7 per cent in 1970, and 21.8 per cent in 1990.

As concerns the changes in marriage pattern, the data given in Table 2 do reflect the patterns of timing of first marriage and patterns of marriage prevalence. Being seen in a foregoing section, there has been a trend of being later in age at first marriage, from early-marriage to late-marriage patterns.

The patterns of marriage prevalence are measured by the percentage of men and women ever married among those aged 45-49. In this study, the percentages of the ever-married, which include the married with spouse, the widowed, and the divorced, are measured by the proportions of other marital status groups besides the never-married.

Like most other countries in Asia, where marriage prevalence by age 50 exceeds 95 per cent (United Nations, 1990: 181), marriage is universal among both men and women in Korea. The trend in marriage prevalence was and has remained over 99 per cent among both men and women.

Sine the prevalence levels are higher than 99 per cent, it is difficult to assess any change in patterns of marriage prevalence during the period of 1960-1985. Among both men and women, the prevalence levels higher than 99 per cent are reached, it is also difficult to estimate any sexual difference in patterns of marriage prevalence.

B. Age at First Marriage

Since Malthus argued that delayed marriage may function as a preventive check to a rapid population growth, many demographers have analyzed patterns of age at marriage. In Korea, a great majority of marriages (especially the first marriages of females) tend to be concentrated within a narrow age span. However, the range of ages at first marriage is changing with industrialization and urbanization of the society.

Following the categorization of marriage patterns made by the United Nations (1990), reference is made to early-marriage, intermediate-marriage, and late-marriage patterns. In this study, the early-marriage pattern for women refers to the singulate mean age of first marriage of 21 years or under, the intermediate to 22-23 years, and the late to 24 years and over.

Table 3. Singulate Mean Age at First Marriage, for Ever-Married Males and Females, 15 Years and Over: 1960-1990

(Unit: Years)							
Area	1960	1966	1970	1975	1980	1985	1990
Whole country							
Male	25.4	26.7	27.1	27.4	27.3	27.8	28.6
Female	21.6	22.8	23.3	23.6	24.1	24.8	25.5
Difference	3.8	3.9	3.8	3.8	3.2	3.0	3.1
Urban Area							
Male	26.8	27.7	27.5	27.6	27.4	27.8	28.4
Female	22.8	24.0	23.8	24.2	24.3	25.0	25.5
Difference	4.0	3.7	3.7	3.4	3.1	2.8	2.9
Rural Area							
Male	24.9	26.1	26.8	27.1	27.3	27.9	29.0
Female	21.0	22.0	22.6	22.9	23.5	24.0	25.1
Difference	3.9	4.1	4.2	4.2	3.8	3.9	3.9

Source: National Bureau of Statistics, *Population and Housing Census Report*, 1960 through 1985. Seoul: National Bureau of Statistics, Economic Planning Board; Taken from Table 10 in Yu-Kyung Kim, 1990, "Proportion of the currently married and age at first marriage: trends and prospects," Pp. 293-359 in *Analysis of Population Dynamics in Korea*. Seoul: Korea Institute for Health and Social Affairs

National Statistical Office, *Advance Tabulation of Two Percent Sample, 1990 Population and Housing Census*. Seoul: National Statistical Office

Table 3 presents data for the changes in the singulate mean age at first marriage for each sex, of the ever-married and 15 years old and over. Traditional norms on family formation in Korea had very strongly favored early marriages for girls. However, a continuous delay in the timing of marriage is assumed to have developed as a result of industrialization and modernization.

Among men the singulate mean age at first marriage was 25.4 years in 1960, and 26.7 years in 1966. Referring the late-marriage pattern for men to the singulate mean age at first marriage of 27 years and over (United Nations, 1990: 5), Korea has essentially been the society of late marriage timing since the 1970s. The singulate mean age at first marriage for men reached 27.1 years in 1970, and 28.6 years in 1990. The pace of change in marriage timing has been limited, but small changes upward are observed in the singulate mean age at first marriage for men.

Among women, there was a similar pattern of relatively low singulate mean age at first marriage, and a trend towards higher singulate mean age at first marriage between 1960 and 1990. The singulate mean age at first marriage for women remained under 23 years during the 1960s, but reached 23.3 years in 1970, and 25.5 years in 1990.

Table 3 shows the differences between male and female mean ages at first marriage. The sexual difference in the singulate mean age at first marriage constitutes distinctive traits of the marriage formation process. In terms of singulate mean age at first marriage, the sexual difference has remained exceeding three years. However, the difference declined substantially during the 1980s. The difference had remained around 3.8 years until 1975, but decreased to 3.2 years in 1980, and to 3.0 years by 1985. In 1990, the difference is 3.1 years. This decline is due to the interaction of the continuous increase in female mean age and no change in male mean age at first marriage after 1975.

The data on the singulate mean age at first marriage illustrate the accomplished transition to late-marriage pattern in Korea. It is difficult to

identify the factors affecting changes in marriage behavior. A continuous delay in the timing of women's marriage is assumed to develop as a result of increased labor force participation with industrialization and urbanization of the society. The higher level of education constitutes one of the most important determinants of the delayed marriage of women in Korea (Kim and Stinner, 1980) . Cultural factors are also assumed to interact with socio-economic variables in shaping marriage norms of the society.

Table 3 also presents the difference in the singulate mean age at first marriage between urban and rural residents. The interesting feature of this comparison is that the regional difference in marriage behavior is significant among women while such difference is not observed among men. In 1960, the singulate mean age at first marriage among male residents in urban areas were later by 1.9 years than rural males. The male singulate mean age at first marriage have maintained at the level of the late-marriage pattern in urban areas during the period of 1960-90, but the age at first marriage has increased among rural males and reached 29.0 years by 1990, which exceeds 27.8 years among urban males in 1960.

Female singulate mean age at first marriage has moved upward in both urban and rural areas. In urban areas, the female age at first marriage has increased from 22.8 years in 1960 to 25.5 years in 1990. The female age at first marriage has moved upward more rapidly in rural areas, from 21.0 years in 1960 to 25.1 years in 1990. There is still a regional difference in female singulate mean age at first marriage. The urban level is higher than the rural level in terms of the singulate mean age at first marriage among women.

The interesting feature of this comparison of singulate mean age at first marriage between urban and rural residents may be explained by two factors. One is the underlying set of marriage norms, and the other is migration pattern of persons in their late teens and early twenties. The rural environment remains relatively subject to the traditional norms of marriage behavior, especially for women. And rural women tend to get married in earlier ages than urban women.

Certain population composition and structure can cause imbalances in the number of eligibles of the two sexes in the marriage market. This imbalance is called a marriage squeeze, which can be generated by migration pattern of young people. The migration of large numbers of rural females in their late teens and early twenties into urban areas result in a shortage of eligible females in the marriage market of rural areas. The shortage of young women in rural marriage market might delay the average age of marriage among men in rural areas.

IV. SIZE AND STRUCTURE OF FAMILIES AND HOUSEHOLDS

The difference between the concepts of family and household is often insignificant. For the purpose of this study, general definitions of the family and household are employed. According to the United Nations' recommendations, the family is defined as "those members of the household... who are related, to a specific degree, through blood, adoption or marriage" (United Nations, 1969; recited from United Nations, 1973: 337). And the household is a socio-economic unit, consisting of individuals who provide themselves with food or other essentials for living (United Nations, 1973: 336). and can be divided into the type of family household and nonfamily household (Sweet and Bumpass, 1987: 336). Since statistical data on families from each census are relatively scarce, this section is devoted mainly to reviewing the changes in the size and structure of households.

A. Size of Household

In the Population and Housing Census, the term ' household ' is defined as "a person who makes provision for his own food or other essentials for living, or a group of two or more persons who make common provision for food or other essentials for living" (National Bureau of Statistics, 1987: 15). Households are divided into two types: ordinary household and institutional household. The ordinary one refers to the household consisting of: (1) head and his/her family, (2) head, his/her family and five other persons or less who have no blood-

relationship to the head, or (3) a person who lives alone. The institutional household is defined as a group of two or more persons who are accommodated in a social welfare institution or dormitory for common activity or benefit and a group of more than six boarders who have no blood-relationship to the head (National Bureau of Statistics, 1987: 15-16). However, the analysis in this section is based on the data of the size and structure of the ordinary households only.

Table 4 presents the number of ordinary households in each census since 1960. Data on annual growth rate show a rapid increase in the number of households. The most rapid increase in the number of households was during the period of 1985-90, when there was an annual growth rate of 3.73 per cent.

During the entire period of 1960-90, the number of households increased more rapidly than the population. There has been 18.7 per cent increase in the

Table 4. Number of Households and Average Household Size: 1960-1990

Census Year	Households		Average Size
	Number	Annual Growth Rate	
1960	4,362,953	-	5.56
1966	5,121,610	2.76	5.43
1970	5,792,983	3.35	5.18
1975	6,647,778	2.89	5.13
1980	7,969,201	3.37	4.62
1985	9,571,361	3.72	4.16
1990	11,357,160	3.73	3.78

Source: National Bureau of Statistics, *Population and Housing Census Report*, 1960 through 1985. Seoul: National Bureau of Statistics, Economic Planning Board; Taken from Table 2 in Il-Hyun Kim and Bong-Ho Choi, 1987, "Trends in family and household sizes in Korea: 1960-1985," Pp. 40-68 in *Population Problems and Their Counter-Measures in Korea*. Seoul: Korea Institute for Population and Health

National Statistical Office, *Advance Report of 1990 Population and Housing Census, based on Two Percent Sample Tabulation*. Seoul: National Statistical Office

number of households between 1985 and 1990, which is 2.5 times as high as the population growth rate during the same period. A more rapid increase in the number of households than the population reflects a decline in average size of households. In 1985, the average household consisted of 4.16 persons, which was the outcome of a long-term decline from 5.56 persons in 1960, 5.18 persons in 1970 and 4.62 persons in 1980. The preliminary count of the 1990 census shows a continuation of the declining trend in the average household size. According to the preliminary report (National Statistical Office, 1991c), the average household appears to consist of 3.78 persons in 1990.

There are many factors causing the rapid decline of the average household

Table 5. Distribution of Households by Size: 1960-1990

(Unit: %)							
Size	1960	1966	1970	1975	1980	1985	1990
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1 person	2.3	3.6	3.7	4.2	4.8	6.9	9.5
2 persons	7.1	7.7	9.3	8.3	10.5	12.3	14.3
3 persons	11.8	11.5	12.8	12.3	14.5	16.5	19.4
4 persons	14.7	13.9	15.0	16.1	20.3	25.3	29.2
5 persons	15.9	15.2	17.0	18.3	20.0	19.5	18.0
6 persons	15.3	15.4	16.3	16.6	14.7	12.4	5.8
7 persons	12.7	13.1	12.2	11.7	9.7	4.2	3.8*
8 persons	8.9	9.1	7.3	7.7	3.3	1.9	
9 persons	5.3	5.9	3.6	2.5	1.5	0.7	
10 and over	4.5	4.6	2.6	2.3	1.0	0.4	

* This is the proportion of the households with 7 persons and over.

Source: National Bureau of Statistics, *Population and Housing Census Report*, 1960 through 1985. Seoul: National Bureau of Statistics, Economic Planning Board; Taken from Table 4 in Il-Hyun Kim and Bong-Ho Choi, 1987, "Trends in family and household sizes in Korea:1960-1985," Pp. 40-68 in *Population Problems and Their Counter-Measures in Korea*. Seoul: Korea Institute for Population and Health

National Statistical Office, *Advance Report of 1990 Population and Housing Census, based on Two Percent Sample Tabulation*. Seoul: National Statistical Office

size. The most significant is the fertility decline, which caused a decrease in the number of children per household, and thus the decrease in the average size of households. A marked increase of one-person households, in terms of the number and the fraction, is also a very significant factor contributing to the decline in the average household size.

Table 5 presents the changes in the distribution of ordinary households by size during the period of 1960-90. The most significant are the changes in the number of one-person households and the fraction of households with many members. There was an increase of 7.2 per cent points in the proportion of one-person households, from 2.3 per cent in 1960 to 9.5 per cent in 1990. The fraction of households with many members has dropped rapidly, while the fraction with few members has shown a gradual increase. By 1990, only 9.6 per cent of all households include six or more members, and 44.2 per cent have three or fewer members. In 1960, about a half of all households (48.2 per cent) included six or more members, and less than one-quarter (21.2 per cent) had three or fewer members.

B. Structure of Household

The great majority of households are family households, and most of them involves married couples. A family household is a household in which at least one member is related to the head. In the census, family households are classified into four types, on the basis of family composition: one-generation households, two-generation households, three-generation households, and more-than-three generation households (National Bureau of Statistics, 1987).

Table 6 presents the distribution of ordinary households by type. Between 1960 and 1985 there was not much change in the distribution of households by type. However the prevalence of one-person households has increased from 2.3 per cent in 1960 to 6.9 per cent in 1985. The proportion of one-generation households, consisting of married couple with no children, has also increased slightly, from 7.3 per cent in 1960 to 9.6 per cent in 1985.

Table 6. Distribution of Households by Type: 1960-1985

(Unit: %)						
Type	1960	1966	1970	1975	1980	1985
Total	100.0	100.0	100.0	100.0	100.0	100.0
Family Households						
1 generation	7.3	5.5	6.5	6.7	8.3	9.6
2 generations	62.6	64.8	67.4	68.9	68.5	67.0
3 generations	26.3	23.0	21.2	19.2	16.5	14.4
4 generations	1.6	2.5	1.1	0.9	0.5	0.4
Nonfamily Households						
one-person	2.3	3.6	3.7	4.2	4.8	6.9
non-relative	-	0.8	-	-	1.5	1.7

Source: National Bureau of Statistics, *Population and Housing Census Report*, 1960 through 1985. Seoul: National Bureau of Statistics, Economic Planning Board; Taken from Table 5 in Il-Hyun Kim and Bong-Ho Choi, 1987, "Trends in family and household sizes in Korea:1960-1985," Pp. 40-68 in *Population Problems and Their Counter-Measures in Korea*. Seoul: Korea Institute for Population and Health

Another census concept that is crucial to understanding the changes in household structure is the household head. The census interview begins with identifying the head of household and collecting information on the characteristics of the head. All other persons in the household are asked of their relationship to the head. According to the United Nations' definition, the head of household is the person who is acknowledged as such by the other household members, and bears the chief responsibility for the economic maintenance of the household (United Nations, 1973: 10).

Between 1966 and 1985, the number of female-headed households increased from 588 thousands to 1,501 thousands, and their relative prevalence increased from 12.0 per cent in 1966 to 15.7 per cent in 1985. The changes in the number of female-headed households and their proportion to all households are the outcomes of several factors. A woman can become a household head in several ways. The majority of women have the primary responsibility for the economic

maintenance to rear their children after the death of their husband, and become female household heads. In 1985, 52.2 per cent of all female household heads were widows (Table 7). Only 4.3 per cent of female household heads were divorced women in 1985, while 22.7 per cent were married and living together with their husbands.

Table 7. Percent Distribution of Household Heads by Sex and Marital Status: 1966-1985

	(Unit: %)			
	1966	1975	1980	1985
Total (N in 1000s)	4,888	6,648	7,969	9,571
Male (N in 1000s)	4,300	5,798	6,801	8,070
never-married	3.6	4.7	4.7	5.6
married	93.8	93.1	92.9	92.3
widowed	2.4	1.9	2.0	1.6
divorced	0.3	0.3	0.4	0.5
Female (N in 1000s)	588	850	1,168	1,501
never-married	2.6	11.8	15.7	20.7
married	33.6	24.5	22.3	22.7
widowed	59.9	59.4	58.1	52.2
divorced	3.9	4.3	3.9	4.3

Source: National Bureau of Statistics, *Population and Housing Census Report*, 1960 through 1985. Seoul: National Bureau of Statistics, Economic Planning Board

During the period of 1966-85, 32.4 per cent of the increase in the number of female-headed households was due to the increase in the number of households with the female head never-married, which was from 15,020 households in 1966 to 310,771 households in 1985. About half of the increase in the number of female household heads was due to the increase in the number of the households with the widowed female head, and only 15.7 per cent was due to the sheer growth in the number of households headed by married women.

Table 7 also shows the increase of households headed by women never-married. Between 1966 and 1985 there was a rapid increase in the propensity of the females-never-married to head their own households. Among females heading their own households, only 2.6 per cent were never married in 1966, and this fraction has increased to 20.7 per cent in 1985.

V. SUMMARY AND CONCLUSIONS

The study has examined and evaluated the changes in marriage patterns and household structures. As concerns the trends in marriage pattern, primary attention is given to marriage prevalence and age at first marriage. In reviewing the changes in family and household, the primary focus is on the size and composition of households.

There has been a rapid increase in the propensity for the young people to be never-married. Marriage rates before age 30 have declined markedly. Among those aged 25-29, the proportion of men remaining single has increased from 37.3 per cent in 1960 to 57.3 per cent in 1990, and the proportion for women has increased from 4.9 per cent to 21.8 per cent during the same period.

Age at first marriage has also increased, and Korea has essentially been a society of late marriage timing. Among men, the singulate mean age at first marriage was 25.4 years in 1960, and reached 28.6 years in 1990. Among women, there was a similar trend towards higher singulate mean age at first marriage. The mean age at first marriage for women remained under 23 years during the 1960s, but reached 25.5 years by 1990.

Declines in marriage rates of young people and increases of the singulate mean age at first marriage imply that young people spend a much larger proportion of their adult lives before adopting marital obligations, and that a significant proportion of them may never adopt marital obligations at all. The change in marriage pattern is assumed to have developed as adaptations to a

changing social environment, following industrialization and urbanization of the society. One of the significant examples is a change in women's role, particularly in women's labor force participation.

The changes in marriage pattern may be regarded as causes of altered structure of families and households. Between 1960 and 1990, there has been a more rapid increase in the number of households than population. This reflects a decline in average size of households. In 1990, the average household consisted of 3.78 persons, which was the outcome of a long-term decline from 5.56 persons in 1960. A marked increase of one-person households was one of the very significant factors contributing to the decline of the average household size. There was an increase of 7.2 per cent points in the proportion of one-person households, from 2.3 per cent in 1960 to 9.5 per cent in 1990.

While the fraction of households with few members or one person only has shown a gradual increase, the fraction of households with many members has dropped rapidly. In addition to the increase in the number of households with fewer members, the number of female-headed households has increased between 1966 and 1985. The estimated increase of the number of female-headed households was from 588 thousands in 1966 to 1,501 thousands in 1985, and their relative prevalence had increased from 12.0 per cent in 1966 to 15.7 per cent in 1985.

There may be many factors underlying the changes in marriage patterns and household structures. One of those is the changing character of gender roles. Because of women's increased participation in labor force, the competitive advantages of women's traditional roles as wife and mother and men's roles as breadwinner have been shrinking. The changes in gender roles are likely to affect the norms on family life, and thus change patterns of marriage.

Though the advance report of 1990 census does not include statistics on household structures, the trends outlined in this study are still very much in process, and thus likely to continue for the foreseeable future. However,

statistical modeling and extensive theoretical discussions are beyond the objectives of this study. Certainly, the issues concerning the factors causing the changes in marriage pattern and household structure as well as their relationships to population dynamics deserve much more extensive analysis than this study provides.

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CHANGES IN MARRIAGE PATTERNS AND FAMILY STRUCTURES SINCE 1960 IN TAIWAN, ROC

*Li Chi**

I. INTRODUCTION

In the decades after World War II, Taiwan has experienced a tremendous social and economic change from a traditional agrarian society to a fairly industrialized and urbanized society. Along with the whole social change in Taiwan, family structure and marriage pattern have also experienced some kind of changes. The nature and the extent of these changes are still to be explored more deeply. The study is trying to make a description of the changes of family structure and marriage pattern in Taiwan in recent decades according to some research results.

The changes in marriage custom in recent decades in Taiwan can be seen easily in everyday life. The westernization of wedding, the loosening of virginity regulation, the decline of the role of match-maker, the shift from arranged marriage toward love match, the decrease of the minor marriage, and the increase of the divorce rate, etc., all display a new image in marriage.

To use a term "modernization of marriage" to cover these phenomena which are related to marriage change would be an easy matter. And nobody would doubt that the change in marriage pattern in Taiwan is closely related to the modernization process of the whole social structure. However, we should demonstrate the changes in marriage pattern systematically.

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Among the perhaps infinite dimensions of the changes in marriage pattern, we are mainly interested in the decision of the selection of spouse, the timing of marriage, marriage rate, and the disunion of couple.

If we regard marriage as basically a process through which a family can be constructed, then the term "family structure" is relatively a static concept. However, to say "static" is not to say that there is no change in family structure, but to say that it is referred to a set of more or less stable social relationship which is resulted from series of human activities.

As a matter of fact, family structure in Taiwan do have experienced a significant transition. In a sense, the change of marriage pattern is a part of it. Besides, it used to be mentioned that father's authority is declining, woman's status in a family is rising, and there seems to be a nuclearization trend in household composition, etc.. The change in family structure is no less important than the economic and political change in the whole social change.

It is useful to make clear some key terms used here. In common usage, family is a broader and looser concept which may include several different levels of kin groups (see Hsieh, J.C., 1982; Tu, C.S., 1982; and Wang, S.H., 1985). When we use "family" as a rigid term rather than a loose one, we refer it to a group of people who are relatives to each other by having common ancestry, especially parents and grandparents, having marital relationship, or having relationship of adoption, and having financial or social reciprocity. In this definition, coresidence is not a necessary condition to compose a family.

A "household" is here a short term of a familial household which refers to a kin group who lives together. By this definition, a household is more definite and measurable than a family. We would say that a household is more suitable for scientific observations. However, the term "family" is still meaningful, because we still need to refer to some kind of close kin group without being necessarily a household. Obviously, one's parents and brothers are almost always his "significant others", even if he is not living together with them.

The term "family structure" refers to the totality of stable relationships among family members. The living arrangement, mutual support, emotional commitment, power structure, and other relationship among family members should be all covered in the concept. It will be difficult and even impracticable to discuss such a broad concept. It will be more practical to select some concrete topics, such as household composition, living arrangement, and mutual support as indicators or operational definitions of family structure. From the observation of household composition and living arrangement, which are more or less external characteristics of family structure, we may find the socio-economic relationship among family members, which may be referred to as the implicit part of family structure.

There are many theories discussing changes of family structure. W. Goode, a famous American sociologist of family, considers the change of family structure a world trend of change (1963). He holds that the nuclear type of family mutually "fits" to the industrialized society. He seems to believe that the conjugal family, a similar concept of nuclear family, may become a typical family type in all industrialized social systems.

In Goode's thinking, industrialization should not be considered only an influence factor of family change. In some sense, family change is a parallel process of industrialization. Both of them are influenced by the changing ideologies, such as economic progress, conjugal family, and equalitarianism. And the change of these ideologies are the main contents of the so-called "modernization". The change of ideological values is not equivalent to industrialization, but partly independent to the latter. Furthermore, the former can be significantly influential to the latter and to the family system. Goode also seems to believe that, in the non-western countries, development in the ideologies of economic progress and conjugal family is prior to the industrialization and change of family structure. And these ideologies and that of male-female equality will result in the predominance of extended family.

Researchers who are interested in the change of Taiwan's family structure

raise some issues about family change in Taiwan. Some of them tried to demonstrate that there actually is a nuclearization trend in Taiwan's household composition, and the trend may be related to the modernization process or people's "modernity" characteristics (Hsu, L.H. and C.C. Lin, 1984, 1989; Hsieh, K.C. 1980).

Other researchers tend to question the statements of nuclearization trend and the influence factors of family change. Dr. T.M. Wang and Dr. K.J. Chen tried to maintain that the basic rule of household composition of Chinese is "stem family". The manifest nuclearization trend may be just a temporary result of demographic transition. That is, in the first half of the transition period, the average number of living adult children tends to increase along with the decline of mortality rate, and the excessive adult children may tend to establish their own nuclear households. However, in the second half of the transition period, the average number of living adult children may decrease along with the decline of fertility rate, and the number of nuclear households may decrease, too.

The argument of the nuclearization trend may be ended by a series of empirical longitudinal survey research. But unfortunately, there is no such a longitudinal research which focuses on household composition in Taiwan. The study tries to use an alternative longitudinal survey research data to make clear the family change in Taiwan.

The issue of the relationship between modernization or industrialization and marriage pattern is often discussed, too. The modern ideology and the employment status and occupational structure in an industrialized society are mentioned when explaining the change in the timing of marriage and in the divorce rate.

II. DATA AND METHOD OF ANALYSIS

A. Data

Data used in this study include several survey findings. These surveys have been carried out by the Taiwan Provincial Institute of Family Planning. They are island-wide surveys, that is, they represent the whole Taiwan Area except 30 aboriginal townships and two small remote-island townships.

The main data used especially for the analysis of the change of household composition are taken from a series of so-called KAP surveys. In these surveys, sample cases are currently married women of childbearing ages. These women are selected with equal probability by a stratified three-stage random sampling.

Six KAP surveys have been conducted so far, in 1965, 1967, 1973, 1980 and 1986. This analysis uses the data of 1967, 1973, 1980, and 1986, so that there will be intervals of 6-7 years and also to avoid too many missing data. The final sample sizes are 4,989, 5,588, 3,859, 4,312 respectively for 1967's, 1973's, 1980's and 1986's surveys.

When only cases of currently married women aged 20-39 are selected for comparison, we get sample sizes of 4,158, 5,540, 3,821, 3,145 respectively.

These surveys were conducted carefully and had high completion rates. However, since the data for the analysis of household composition were not sampled directly from a household list, its representativeness may be limited to some extent. In short, the samples can not represent households in which there is no currently married woman of childbearing age. And, besides, the samples may overrepresent the households in which there are more than one childbearing age married women. These shortcomings might pose some problems in generalizing research finding, but it should not be serious.

Each survey included family composition and related information. The sample, as mentioned before, did not include households without a currently married woman of child-bearing age. Therefore, households with single or old married women, the divorcees, or the widower, or households with only old parents were excluded.

In addition to the above data, some other data were used mainly for the analysis of the change of marriage pattern.

The data used for the analysis of marriage pattern are taken from two young women surveys, that is, the 1971 Young Women KA Survey and the 1978 Young Women KAP Follow-up Survey. Both surveys were also conducted by the Taiwan Provincial Institute of Family Planning. In the 1971 survey, the sample covered both single and married women aged 18-29. These women were selected with equal probability to represent single and married women aged 18-29 of Taiwan excluding 30 aboriginal townships. The final sample consisted of 2,035 married women and 1,555 single women. In the 1978 survey, 1,555 respondents of 1971 survey who were still single in 1971 were followed-up.

Data of another similar island-wide survey of unmarried women in 1984 are also used to supplement some recent information in order to make comparison.

Besides, some other data are also reviewed. They are the Demographic Factbook of Taiwan-Fukien Area and some census reports.

B. Method of Analysis

Statistical methods employed here include some commonly used statistics such as percentage distribution, ratio, rate and contingency tables. In addition, the method of multiple classification analysis (MCA) is employed as a kind of multivariate analysis to show the relationships between variables. It is similar to the multiple regression analysis method, except that it uses dummy variables

when the dependent variables are not numerical data, and, therefore, its Beta-value is different from the partial Beta coefficient. It shows the relative importance of a factor after adjustment, that is, controlling the effects of other variables. However, it is convenient in that it takes ordinary scale factors. Results are shown as the deviation from grand mean for each category before and after adjusting the effects of other variables.

In the analysis of factors which influence the household composition change, the four KAP survey data are pooled into one, and a new variable of interview year is constructed to make comparison and to see the family change over time.

Comparisons among different years are an important part to show the change. However, since not all questions asked in each survey are identical, it makes some comparisons difficult, as noted in the report.

Since we are interested in whether there actually is a substantive change of household composition, or the change is only a result of demographic transition, sometimes we exclude cases (married women of childbearing age) who have no husband's parent, and make comparisons among subgroups of different numbers of husband's brothers.

III . CHANGES IN MARRIAGE PATTERN

A. The Decline of the Parental Decision on Mate Selection

In Taiwan, there existed three kinds of marriage system, or say, marriage pattern in the past. In the so-called major marriages, the culturally preferred pattern, the wife joined the husband's family at the time of marriage; in the minor marriage pattern, the future wife was adopted into the parents-in-law's family as a young child where she was raised to adulthood; and in rarer uxori-local marriage, the husband joined the wife's family at time of marriage.

One of the common features of these marriage patterns was that the marital decisions and arrangements were largely made by the parental generation. This was especially true for the minor marriage pattern.

There are many reasons to expect a transformation of these marriage patterns. The expansion of educational attainment and urban living, the shift to non-familial employment and industrial work, and new experiences with non-family living arrangements before marriage must have significant effects on the roles of young people and their interactions with peers and parents. Young people have been oriented from a world organized almost entirely by family elders to one which offers the chance to participate in non-family institutions. These provide opportunities for independence from parents and chances to interact with the opposite sex. Besides, people become richer, that will decrease the economic stress of the poor. The minor marriage pattern is deeply related to the economic stress.

However, we have no data to indicate changes of the proportion of the above-mentioned marriage patterns. Actually, it is rarely heard of the minor and uxorilocal marriages nowadays. Besides, we have the evidences that parents' authority on the decision of marriage has declined.

Based on the data of the 1986 KAP survey, A. Thorton et al. show that the proportion of married women whose marriage was decided by parents had declined from 68% for the group of 1933-34 birth cohort to 11% for the group of 1960-64 birth cohort. On the contrary, the proportion of those whose marriage was decided by the couple themselves rised from 14% for the group of 1933-34 birth cohort to 32% for the group of 1960-64 birth cohort (Thorton, A., J.S. Chang, and H.S. Lin, 1991).

In addition, the number of women who became acquainted with their future husbands through the introduction of parents or matchmakers became less, and they had more and more chances to date with their prospective husbands before marriage (see Table 1).

Table 1. The Process of Mate Selection by Birth Cohort, 1986, Taiwan*

Process of Mate Selection (Number of respondents)	Percentage Distributions by Birth Cohort						
	1933- 1934	1935- 1939	1940- 1944	1945- 1949	1950- 1954	1955- 1959	1960- 1964
	402	373	604	690	1000	1004	575
Who Decided Marriage							
Parents	68	57	47	42	30	19	11
Both parents and couple	18	29	37	39	49	51	57
Couple	14	14	16	19	21	30	32
Total	100	100	100	100	100	100	100
How first became acquainted with husband							
Through parents or relatives	--	36	34	35	28	22	16
Through professional matchmaker	--	26	24	20	14	9	5
In same neighborhood	--	8	8	6	6	6	6
Through friends	--	23	22	28	32	30	32
Through work	--	4	9	8	13	20	23
At school	--	2	2	1	3	5	4
By self	--	3	3	4	6	8	14
Dating husband before marriage							
No dates	--	64	52	40	22	12	4
Dates with parental approval	--	29	37	47	60	62	61
Dates without parental approval	--	7	11	13	18	26	35
Total	--	100	100	100	100	100	100

* Quoted from Table 2 in A. Thorton, J. S. Chang, and H. S. Lin, 1991, "From Arranged Marriage Toward Love Match," in Social Change, Family and Fertility in Taiwan. (unpublished)

In short, people have more freedom in their marriages and process of mate selection. Parents' authority on the decision of marriage has declined. This is an important change in the process of mate selection which may influence deeply the family structure.

B. The Delaying Trend of the Timing of First Marriage

According to the Chinese traditional culture, people are encouraged to marry earlier. However, after the industrialization and modernization, there seems to be a delaying trend for the timing of first marriage. The average age of first marriage is gradually getting higher. It is around 28 years for male and 26 for female nowadays.

Data of the Young Women Surveys show that, for women of 1940-53 birth cohort, the likelihood of making the transition from single life to marriage before age 15 was very low. After age 15, the likelihood rised significantly and steadily. It reached the highest level at about age 23 and maintained a similarly high level throughout age 26. After age 26, the rate of marriage for those women who still remained single dropped dramatically until it reached a very low level at about age 32.

When marriage rates are compared among the three groups of birth cohorts, different patterns emerge. There is no difference in the likelihood to transit to first marriage before age 19 among these three groups of women. However, women born in 1950-53 start to show a much lower marriage rates at each age after age 19 than those born before 1950. Among those women born before 1950, marriage rates before age 22 are very similar accross birth cohorts. After that age, women born in the postwar babyboom period (1946-49) show a lower marriage rate than women born during World War II. These differences clearly indicate that there was a dramatic decline in marriage rate in the later birth cohorts. In addition, the patterns also show that among women born after World War II, the shapes of the marriage curve from age 21 to age 25 are similar, although for each age, the rates for the 1950-53 cohort are always much

lower than those of the 1946-49 (Lin. H.S., 1988:52-58).

Looking at the data of age- and sex-specific first marriage rate calculated according to the data of the Demographic Factbook of Taiwan-Fukien Area, we would find that the first marriage rate declined for women aged under 30 and aged 40-49, and kept relatively steady for the other age groups (see Table 2). These data all indicate the delaying of marriage.

Table 2. Age- and Sex-Specific First Marriage Rate in Taiwan: 1975-87*

Age	Sex	'75	'76	'77	'78	'79	'80	'81	'82	'83	'84	'85	'86	'87
15-19	M	7	4	4	4	4	4	3	3	3	3	2	2	2
	F	38	25	23	23	21	21	18	15	13	12	11	11	10
20-25	M	77	51	50	51	45	47	46	42	38	33	30	27	24
	F	186	167	163	166	146	160	153	137	127	113	108	96	86
25-29	M	262	305	290	283	251	263	248	214	207	187	179	158	150
	F	238	352	355	345	251	306	303	299	266	272	257	254	229
30-34	M	181	259	269	283	273	280	261	232	219	202	199	183	176
	F	88	122	134	139	130	135	132	124	124	114	109	110	112
35-39	M	74	91	93	92	83	85	86	87	94	93	90	87	82
	F	45	47	42	39	36	43	49	57	55	49	47	47	46
40-44	M	47	36	35	35	35	37	37	39	41	36	31	32	33
	F	34	28	22	22	22	23	25	33	33	24	19	25	22
45-49	M	35	33	28	27	21	22	19	20	21	20	19	17	18
	F	23	19	18	14	13	16	17	22	21	16	11	14	12
50+	M	14	14	13	13	12	12	15	15	19	16	15	16	15
	F	12	7	6	6	6	6	7	7	15	20	12	18	18

* Quoted from Table 2 in H. S. Lin, M. L. Lee, and Thorton, 1991, "Marriage and Marital Dissolution," in Social Change, Family and Fertility in Taiwan (unpublished)

The promotion of educational level and higher proportion of employment, especially for women, are said to be the main factors that influence the delaying of marriage. Since the promotion of educational level continues and the proportion of female employment keeps rising, we may expect that the trend of

marriage delaying will continue, too. However, the mating process and premarital sex may increase.

C. The Decline of the Marriage Rate

The traditional norm encouraged people to marry, those women who did not marry after age 30 would be called spinsters. An adult single would face this kind of social pressure. Under the influence of the culture, life-long single was the absolute minority.

However, the norm of encouraging marriage seemed to become loosened in the several decades. The empirical data show that the pace of decline in marriage intensified after 1940. For example, by 1956, only 11% of women aged 15-19 had ever been married, and this percentage fell to 3% by 1987. Similarly, the fraction of women aged 20-24 ever married fell from 84% in 1940 to 60% by 1966, and by 1987 only 29% of all women of this age had ever married. Less dramatic declines also occurred at the older ages, with the percentage of the women aged 25-29 who had ever married declining to 74% in 1987. Marriage, however, continued to be fairly universal among older women, with 97% of those aged 45-49 in 1987 having ever been married (Lin, H.S., M.L. Lee, and A. Thornton, 1991).

It is likely that there is a positive association between late marriage and life-long single. In other words, for those who have not been married in their 30's or 40's, marriage probability may be lower and lower with aging.

Although we have no data showing the differential marriage rates for different socio-economic status groups, we expect that women who have higher educational attainments and professional jobs may have lower marriage rate.

D. The Rising of the Divorce Rate

In the traditional time, Chinese had very low divorce rate. The social

norms disapproved of divorce. Divorce means losing face and the possibility of the termination of economic and social support from the family of the spouse. However, the inhibition of divorce was loosened. On the contrary, the factors which might lead to divorce increased. Hence, the divorce rate in Taiwan has been rising in the recent decades.

The empirical data show that the crude divorce rate once declined from 1940s to 1960s, then increased from 1960s to now. In 1968, the crude divorce rate was 0.35 per thousand, but in 1982, it was 0.93 per thousand (Lee, M.L., 1984: 43). The age-specific divorce rate increased, especially for the young adult male group. For example, the age-specific divorce rate of men aged 20-24 was 4.3, 5.7, and 7.0 per thousand in 1975-77, 1978-80, and 1981-82 respectively. The increase of the rate is less dramatic for the female group, though the trend is the same (see Table 3).

Table 3. Age-Specific Divorce Rate by Sex in Taiwan: 1975-1982*

(per thousand)						
age	1975-77	1978-80	1981-82	1975-77	1978-80	1981-82
	Male			Female		
-19	3.7	3.0	5.0	6.0	6.0	6.5
20-24	4.3	5.7	7.0	5.7	6.7	8.0
25-29	4.3	6.0	7.0	5.0	6.7	7.5
30-34	4.0	6.7	7.5	3.3	5.0	6.5
35-39	2.7	4.3	5.5	2.0	3.0	4.0
40-44	2.0	2.7	3.5	1.7	2.0	2.0
45-49	2.0	2.0	2.0	1.0	1.0	1.5

* Quoted from Table 7 in M. L. Lee, 1984, "On the Characteristics of Divorce Rate in Taiwan," pp. 23-46 in Chinese Journal of Sociology, No. 8, Taipei: Chinese Sociological Association.

It is found that the educational level and occupation are related to the divorce rate (Lee, M.L., 1984; Lin, H. S., M.L. Lee, and A. Thornton, 1991).

The divorce rate is higher for those who have higher educational level, especially male, and who work in the tertiary industries. Generally speaking, the increase of the divorce rate is positively associated with factors related to modern-ization, such as: migration rate, the proportion of the tertiary industry workers, and the educational level.

IV. CHANGES IN FAMILY STRUCTURE

A. The Change of Household Type in Taiwan

It used to be said that "big family" (da chia ting), or more strictly speaking, extended household, was the main type in the traditional Chinese society. However, the currently common statement is that extended family is rare even in the traditional China because of high mortality and low nuptiality, especially for the poor people. Some scholars mention about the conflict between husband's brothers or between sisters-in-law to explain the division trend of a household. Anyway, some scholars, mainly anthropologists, began to question the predominance or typicality of extended household in the traditional and more modern Chinese societies. Francis L.K. Hsu even said that the extended family of Chinese society is only a "myth" (1943).

Nevertheless, it is still generally believed that, in the traditional Chinese family, the norm of living arrangement was for the family members to live together as long as objective conditions permitted, especially for parents and children. In the agricultural society, this arrangement was more economical and one of the ways in assuring the continuity of the family. It also made it easier for the younger generation to take a good care of the elderly members of the family. The traditional view was not to travel far from home while one's parents were still alive. The intent was to prevent parents from having to worry about children exposed to danger. In our opinion, the "big family" value may have actually existed in the traditional period, and it was meaningful in considerations of economic, security, and defense needs in that time.

However, these considerations can hardly be the same nowadays. With the transfer of family functions to other organizations, many activities are carried out away from home. Social change has established a new environment in which people have less need to live together and have more chance to live apart.

According to the above discussion, we would expect to see a nuclearization trend or trend of "living apart" in household composition in the recent decades. However, the predominance of extended household would not be true even in the early period of the recent decades.

With regard to the issue of the change in household type and in living arrangement in recent decades, the KAP survey data may be very helpful for us to make them clear.

One of the main dependent variables is family household type. Family household types can be classified into four main categories: (1) nuclear household, that is, couple living together with no more than their children; (2) stem household, that is, couple living together with husband's or wife's parents or grand parents other than children; (3) joint-stem household, that is, couple living together with (grand)parents and other married brothers; (4) joint household, that is, couple living together with married brothers without (grand) parents together. Sometimes, we may call the latter three as complex households relative to the simple type: nuclear household.

Although family household has been defined as kin group living together, it still can have different meanings according to the different combination of the two operational criteria of "living together": living together (a narrower term without eating situation implied) and eating together. Four kinds of operational definitions of family household can be theoretically derived from different combinations of the two criteria: living together and eating together; living together or eating together; living together only; and eating together only. We can realize that the first definition will cover a smaller number of complex households than the second definition since the second one is looser in its

requirements. In the following analysis, the first definition -- living and eating together -- will be used. But, in the beginning, some basic analysis according to the second definition will also be shown so as to make a comparison.

According to the report of the Taiwan-Fukien Area census factbook, the average size of household was 6 in 1940, 5.7 in 1966, 5.5 in 1970, and 4.8 in 1980. The proportion of households with 7 or more members is 36.5% in 1966 and 20.5% in 1980. In the same period, the proportions of households with 4 or less members are 35.8% and 46.4% respectively. The household size is obviously declining. However, we still do not know whether there is a nuclearization trend of household type. The change of the household size may not necessarily reflect the change of the household type. In short, a nuclear household can have a large size because of high fertility, and a household classified into complex type may have only a relatively small size.

We have no direct data to show the distribution of household types in Taiwan. Compared with other data, the KAP survey data may be more acceptable to be used to show the trend of the household type since it is a longitudinal survey and it has collected a set of relatively abundant data of household composition.

In Table 4, we use data of four KAP surveys to show the change of the distribution of household types in Taiwan between 1967 and 1986. In this table, we exclude couples who have no husband's parent so that all couples analyzed are theoretically able to establish stem or more extended households. Therefore, the difference of the distribution cannot be resulted from the availability of parents, that is, a demographic factor rather than a substantive one.

For the currently married women aged 20-39 interviewed in the four surveys, the proportions who had husband's parent(s) available at the time of survey were 74.46%, 72.74%, 79.72%, and 86.52% for the four surveys respectively.

In Table 4, we note that the proportion of nuclear households increases

and that of joint-stem and joint households decreases over time. The contrary changing trends of the simple type and the complex type are very obvious. However, despite of the changing trends, during the two decades, nuclear households were almost always the majority. On the contrary, joint-stem and joint households were the minority, especially the joint households.

Table 4-1 Distribution of Household Type, 1967, 1973, 1980, and 1986, Taiwan*

Household type	year							
	1967		1973		1980		1986	
	N	%	N	%	N	%	N	%
Total	3096	100.00	3096	100.00	3096	100.00	3096	100.00
Nuclear	1398	45.16	1941	48.27	1587	52.19	1572	57.77
Stem	1220	39.41	1713	42.60	1209	39.76	965	35.46
Joint-stem	453	14.63	352	8.75	222	7.30	167	6.14
Joint	25	0.81	15	0.37	23	0.76	17	0.62

Table 4-2 Distribution of Household Type, 1967, 1973, 1980, and 1986, Taiwan**

Household type	year							
	1967		1973		1980		1986	
	N	%	N	%	N	%	N	%
Total	3096	100.00	4017	100.00	3042	100.00	2721	100.00
Nuclear	933	30.14	1470	36.59	1324	43.52	1431	52.59
Stem	1195	38.60	1759	43.79	1234	40.57	1049	38.55
Joint-stem	766	24.74	734	18.27	447	14.69	211	7.75
Joint	202	6.52	54	1.34	37	1.22	30	1.10

* The operational definition of "living together" is: living and eating together.

** The operational definition of "living together" is: living or eating together.

Stem households played the second role in terms of the proportion. However, it seemed strange that the proportion of stem households increased from 1967 to 1973, and then declined from 1973 to 1986. It may be true that

the proportion of stem households had increased twenty years ago, and then declined. It is also possible that the increase was only due to the difference of the questioning, especially in 1967's survey. Anyway, the proportion of stem households was declining after 1973.

Actually, Table 4 includes two subtables. Both of the two subtables show the distributions of four types of family household. In Table 4-1, the classification of family household follows the most strict definition of "living together" of family members, that is, living together and eating together. Table 4-2 shows another result analyzed in which "living together" is defined as living together or eating together. The latter result is roughly similar to the former one except for some minute points.

In Table 4-1, the proportion of nuclear household is 45.2% in 1967 and 57.8% in 1986. The proportion of the stem household is 39.4% in 1967 and 57.8% in 1986. The proportions of the joint-stem household and joint household are 14.6% and 0.8% in 1967, and 6.1% and 0.6% in 1986 respectively.

In Table 4-2, the proportion of nuclear household is 30.1% in 1967 and 52.6% in 1986. The proportion of the stem household is 38.6% in 1967 and 38.6% in 1986. The proportions of the joint-stem household and joint household are 24.7% and 6.5% in 1967, and 7.8% and 1.1% in 1986 respectively.

Households which are represented by the data are less likely to be complex type because a household without a currently married woman of childbearing age is basically a broken family or a household composed of old-age people and their young (grand)children. Therefore, the proportions of nuclear household shown here may be the lowest estimates of the real proportions of them among all households in Taiwan. Even if we use the loose definition of living together, there will still be at least a half of the households being nuclear households nowadays. And there were no more than one-fourth and seven percent of the households being joint-stem and joint households respectively even two decades ago.

If we compare the two subtables, we can find that there are more joint-stem and joint households and less nuclear households in Table 4-2 than in Table 4-1, especially in the early period. This gives us some evidence that there were more cases who lived together with their parents or married brothers but not ate together or vice versa in the early period than in the late period. In other words, the process of living apart is more thorough now than before.

Since, according to Wang and Chen's opinion, the nuclearization trend may result from demographic transition, it is necessary for us to test whether the number of married brothers of couple may influence the household composition. In Table 5, we put the variable of "whether the couple had at least one husband's married brother or not" as a control variable. It is obvious that there were much more stem households for those who had no husband's married brothers than those who had. On the contrary, the couple who had married brothers had higher chance to live in a nuclear household.

Table 5. Distribution of Household Type in Taiwan by the Availability of Husband's Married Brother, 1967, 1973, 1980, and 1986, Taiwan

Household type	1967		1973		1980		1986	
	N	%	N	%	N	%	N	%
(1) at least one husband's married brother available								
Total	2121	100.00	2856	100.00	2288	100.00	2103	100.00
Nuclear	625	29.47	1197	41.91	1110	48.51	1242	59.06
Stem	532	25.08	887	31.06	712	31.12	635	30.19
Joint-stem	760	35.83	712	24.93	428	18.71	195	9.27
Joint	204	9.62	60	2.10	38	1.66	31	1.47
(2) no husband's married brother								
Total	975	100.00	1158	100.00	756	100.00	613	100.00
Nuclear	338	34.67	320	27.63	241	31.88	232	37.85
Stem	637	65.33	838	72.37	509	67.33	377	61.50
Joint-stem	0	0.00	0	0.00	6	0.79	4	0.65
Joint	0	0.00	0	0.00	0	0.00	0	0.00

But one noticeable exception is that in 1967, the proportion of the nuclear household for those who had no married brothers was no less than those who had. Hence, it is not necessary for a group to have more nuclear households if they have higher proportion of married brothers available. The increase of the proportion of nuclear household can not be directly inferred from the increase of the number of adult children.

Table 6. Distribution of Household Type in Taiwan by the Number of Husband's Brothers, 1973, 1980, and 1986, Taiwan

Household type	1973		1980		1986	
	N	%	N	%	N	%
(1) no husband's brother						
Total	402	100.00	262	100.00	228	100.00
Nuclear	79	19.65	67	25.57	69	30.26
Stem	321	79.85	192	73.28	158	69.30
Joint-stem	2	0.50	3	1.15	1	0.44
(2) one husband's brother						
Total	725	100.00	600	100.00	624	100.00
Nuclear	219	30.21	213	35.50	270	43.27
Stem	388	53.52	305	50.83	302	48.40
Joint-stem	112	15.45	79	13.17	48	7.69
Joint	6	0.83	3	0.50	4	0.64
(3) two husband's brothers						
Total	1587	100.00	1224	100.00	1045	100.00
Nuclear	651	41.02	572	46.73	619	59.23
Stem	630	39.70	459	37.50	321	30.72
Joint-stem	294	18.53	176	14.38	90	8.61
Joint	12	0.76	17	1.39	15	1.44
(4) three or more husband's brothers						
Total	1264	100.00	943	100.00	819	100.00
Nuclear	555	43.91	490	51.96	516	63.00
Stem	364	28.80	259	27.47	231	28.21
Joint-stem	303	23.97	176	18.66	60	7.33
Joint	42	3.32	18	1.91	12	1.47

Table 6 is similar to Table 5 in designating the relationship between the number of husband's brothers and the household type, except that whether the brothers were married or not was not differentiated due to the lack of appropriate data.

In order to ascertain the nuclearization trend, we used MCA for a multivariate analysis. The interview year, husband and wife's ages, duration of this marriage, and the availability of husband's married brother were put into the model shown in Table 7. Two different models were compared. The second model is similar to the first one except that the interview year was withdrawn. The result of F-test shows a statistically significant difference, that is, the increase trend of nuclear household over time does exist other than the possible influence of age, duration of marriage, and the availability of married brother. In other words, there actually is a nuclearization trend of household composition in Taiwan, that means the change is not only the result of demographic transition but also a substantive behavioral change.

B. Living Arrangement

Given some kind of availability of relatives, household composition is basically the result of living arrangements. Living arrangement is itself a substantive behavior. A so-called "substantive" nuclearization trend implies the change of living arrangement.

The living arrangement which is most related to household type classification should be the parent-children living arrangement and the living arrangement among married brothers. We have known that there were few joint-stem or joint households even in the time of 1967. Hence, the parent-children living arrangement should be the focus of analysis here.

The discussion of the parent-children living arrangement can be divided into two parts according to the timing of the incidence: the living arrangement at the time of marriage and of survey. Firstly, we would discuss the living arrangement

Table 7. Relationship Between Household Type and Year: A Multiple Classification Analysis of Household Type

Model: YEAR+WAGE+HAGE +DURMAR+HMB				Model: WAGE+HAGE +DURMAR+HMB			
N = 12813 Mean = 0.5039 R-square = 0.5039 adj R-square = 0.5039 F(14,12798) = 55.282				N = 12813 Mean = 0.5039 R-square = 0.5039 adj R-square = 0.5039 F(14,12798) = 55.282			
Factors		Eta-square	Beta-square		Eta-square	Beta-square	
YEAR		0.0084	0.0062		--	--	
WAGE		0.0208	0.0056		0.0208	0.0074	
HAGE		0.0181	0.0023		0.0181	0.0029	
DURMAR		0.0170	0.0022		0.0170	0.0020	
HMB		0.0337	0.0240		0.0337	0.0259	
Factors	N	%	adj.%	N	%	adj.%	
YEAR							
1967	3091	45.10	45.45	--	--	--	
1973	3987	48.13	48.66	--	--	--	
1980	3041	52.06	52.21	--	--	--	
1986	2694	57.91	56.55	--	--	--	
WAGE							
20-24	2453	37.99	44.52	2453	37.99	43.65	
25-29	4048	48.12	48.69	4048	48.12	48.43	
30-34	3604	55.08	52.49	3604	55.08	52.95	
35-39	2708	58.75	55.43	2708	58.75	56.00	
HAGE							
18-24	557	28.55	40.54	557	28.55	40.13	
25-34	7196	47.24	49.91	7196	47.24	49.59	
35-44	4781	57.08	52.04	4781	57.08	52.49	
45-73	279	60.57	54.05	279	60.57	55.48	
DURMAR							
0- 1	1281	36.38	44.69	1281	36.38	46.11	
2- 5	3401	44.75	49.55	3401	44.75	50.56	
6-10	3704	53.38	53.08	3704	53.38	53.28	
11-19	4162	56.22	50.49	4162	56.22	49.20	
20-36	265	56.98	49.45	265	56.98	47.06	
HMB							
yes	9328	55.99	55.12	9328	55.99	55.30	
no	3485	35.38	37.72	3485	35.38	37.23	

Footnote:

1. The dependent variable is: "whether this is a nuclear household?" code 1 is "yes", code 0 "no".
2. Independent variables are as follows: YEAR: the year of survey; WAGE: wife's age; HAGE: husband's age; DURMAR: duration of this marriage; and HMB: the availability of husband's married brother.
3. The result of F-test shows that the difference of the two values of R-square (unadjusted) of the two models is significant at 0.01 level.

at the time of survey, from which the above-mentioned household type resulted.

Table 8 shows the result of the analysis of the coresidence of couples and parents. There were 59.6% of the couples living together with their parents. The proportion declines to 41.4% in 1986. Obviously, the coresiding arrangement of parent-children decreases. Couples tend to live apart from their parents.

Table 8. Status of Coresidence of Couples With Husband's Parents by the Availability of Husband's Married Brother, 1967, 1973, 1980, and 1986, Taiwan

Status of coresidence	1967		1967		1967		1967	
	N	%	N	%	N	%	N	%
Total								
yes	1846	59.63	2282	56.82	1548	50.84	1123	41.35
no	1250	40.37	1734	43.18	1497	49.16	1593	58.65
(1) husband's married brother available								
yes	1239	58.42	1486	51.99	1049	45.83	759	36.09
no	882	41.58	1372	48.01	1240	54.17	1344	63.91
(2) husband's married brother unavailable								
yes	607	62.26	796	68.74	499	66.01	364	59.38
no	368	37.74	362	31.26	257	33.99	249	40.62

Comparing the two subgroups of those couples who had and did not have husband's married brothers, the proportion of coresidence was higher for the latter. The proportion of coresidence with parents was still over a half for the latter even in 1986. Besides, the proportion declined more slowly for the latter, too.

In other words, the rule of coresidence of parent-children was not wholly

Table 9. The Cumulative Rate of Household Dissolution of Currently Married Women Aged 20-39 by Duration of Marriage in Taiwan*

Duration of marriage	1973	1986
undr 5 years		
% ever lived with husband's parents	78.81	67.79
cumulative rate of household dissolution		
1 year	13.51	16.33
2 years	23.74	24.54
3 years	29.74	31.46
5-9 years		
% ever lived with husband's parents	86.62	70.30
cumulative rate of household dissolution		
1 year	8.96	11.73
3 years	22.97	24.78
4 years	32.13	36.28
7 years	41.11	46.21
9 years	47.66	53.90
10-14 years		
% ever lived with husband's parents	89.40	70.19
cumulative rate of household dissolution		
1 year	4.16	9.50
3 years	13.87	18.73
5 years	21.56	26.91
7 years	28.75	38.52
9 years	35.06	46.44
15 or more years		
% ever lived with husband's parents	93.48	80.82
cumulative rate of household dissolution		
1 year	3.65	8.47
3 years	9.30	22.03
5 years	14.62	32.20
7 years	19.60	40.25
9 years	23.42	48.31

* Couples analyzed in this table include only those who ever lived with husband's parents for one month or more with Taiwanese wives, husbands aged under 45 and at least one of the husband's parents available.

abandoned. At least one adult child should be arranged to live with parents. That is why the proportion of single married son living together with parents remained fairly steady, although the rule of coresidence was weakening in general.

According to the Chinese traditional custom, newly married couples were supposed to live with husband's parents. It was the responsibility of the parents to prepare a room at son's marriage. This indicates a strong desire of parents for their sons to stay at home to inherit the family, and to support parents at their old age.

From one of Dr. T.H. Sun's related papers (1990), it is found that the proportion of couples living with parents right after marriage tends to decrease, too.

The tendency of living apart from parents exists both at the time of survey and of marriage. The following analysis of the cumulative rate of household dissolution may be able to give us a more detail view in household dissolution process. From Table 9, it is shown that the proportion of coresidence with parents decreased from 1973 to 1986 even when duration of marriage is controlled. Besides, couples live apart from parents earlier now than before, that is, duration of coresidence with parents tends to be shortened.

We may explore the status of living arrangement from the parent's side. The image shown from this side may be different.

Table 10 shows that, for parents who had at least one married son, there still were almost 70% living with at least one married son even in 1986. The proportion was higher for those who had at least two married sons than for those who had only one married son. It is obvious that, in Taiwan nowadays, an old man who has married sons is still very likely to live with one of his married sons.

Table 10. Status of Coresidence of Husband's Parents With Married Sons by Number of Married Sons. 1973, 1980, and 1986, Taiwan

Live with married sons?	1973		1980		1986	
	N	%	N	%	N	%
Total						
yes	3211	79.96	2313	75.96	1862	68.56
no	805	20.04	733	24.04	854	31.44
had only one married son						
yes	815	70.38	504	66.67	368	60.03
no	343	29.62	252	33.33	245	39.97
had two or more married sons						
yes	2396	83.83	1809	79.03	1494	71.04
no	462	16.17	480	20.97	609	28.96

Table 11. Proportion Living With At Least One Husband's Married Brother for Those Whose Husband's Married Brother is Available, 1973, 1980, and 1986, Taiwan

Live with married brothers?	1973		1980		1986	
	N	%	N	%	N	%
Total	2858	39.42	2289	31.57	2103	29.01
never	1000	34.99	1017	44.43	1093	51.97
only at marriage	4	0.14	329	14.37	610	29.01
ever after marriage	1040	36.39	160	6.99	175	8.32
only now	248	8.68	56	2.45	61	2.90
at marriage and now	566	19.80	58	2.53	164	7.80
at and after marriage	0	0.0	370	16.16	0	0.0
after marriage until now	0	0.0	299	13.06	0	0.0

* The periods of time are roughly defined and may not be completely consistent among the three surveys.

However, viewing from the other side, the probability of coresidence is also declining no matter how many married sons one has.

As for the living arrangement among married brothers, we can expect the trend of decline in coresidence rate only by viewing the decline of joint-stem and joint households. Table 11 may give us some more detail information about the dividing trend among married brothers. For those who had at least one married brother, the proportion of never living together with other married brothers increased from 35% in 1973 to 52% in 1986.

C. Attitude Toward Coresidence

In the KAP survey data, we have little information about the attitude of living arrangement. From the 1973 survey on, it was asked that whether the wife thought that a newly-wed couple should live together with husband's family. Table 12 shows that the proportion of those who thought a newlywed couple should live together with husband's family was 58.4% in 1973 and 39.4% in 1986. On the contrary, the proportion of those who thought a newlywed couple should live alone increased from 17.5% in 1973 to 30.4% in 1986. More and more

Table 12. Distribution of Currently Married Women Who Thought A Newly Married Couple Should Live With Husband's Family. 1973, 1980, and 1986, Taiwan

Should live with H's family or not?	1973		1980		1986	
	N	%	N	%	N	%
Total	4030	100.00	3046	100.00	2721	100.00
should live alone	704	17.49	749	24.59	826	30.36
depends	962	23.87	1134	37.23	794	29.18
should live with H's family	2352	58.36	1156	37.95	1072	39.40
NA	12	0.30	7	0.23	29	1.07

wives thought that a newlywed couple should live alone. The tendency of the attitude change is consistent with the change of household type and living arrangement mentioned above.

T.H. Sun's related paper (1990) mentioned another aspect of the attitude toward coresidence, that is, whether a married woman wants to live with her children and grand-children when she is old. The result shows that the proportion of women who do not want to live with married sons in the future increased over time. However, the proportion of women who want to live with children in the future was still over 40% in 1986, and higher than that of women who do not do so.

Almost all analyses mentioned above give us evidence of the decline of the traditional norm of living arrangement and the current tendency of living apart, which may support the statement of the nuclearization trend.

But, viewing from the other side, we can also find some evidences showing that the traditional norm of coresidence is more or less persistent. One is that most old parents who had at least one married son were still living together with one of the married sons. Next, there still was a fairly large proportion of married women who thought a newlywed couple should live together with husband's family. Besides, Sun's findings also show that many women still want to live together with their married sons when they become old.

D. Socio-Economic Factors Related to the Nuclearization Trend

From a couple's point of view, their household type is determined mainly by two factors: the availability of husband's parents and married brothers; and the living arrangements among these relatives.

Without husband's parent(s) and married brother(s) available, it is almost impossible for a couple to organize a complex household unless with other relatives. The availability of relatives is, from a macro point of view, determined

directly by some demographic factors, such as mortality, fertility, and nuptiality. Since couples have experienced demographic transition, that is, the decline of mortality and fertility, the availability of relatives may have been influenced. The main possible result concerned may be the increase of the number of brothers. Since old parents tend to live only with one married son, the excessive married sons will be more likely to organize nuclear households (see Wang, T.M. and K. J. Chen, 1988). This is a demographic factor which may have impact on the increase of nuclear households.

In the following analysis, the number of husband's brother, or a simplified variable, the availability of husband's married brother, will be put into the models.

Besides, couple's ages and duration of marriage are all related to the family life course, and, therefore, may have influences on household composition. These three variables will be put into the models, too.

Relative to the demographic factors, living arrangement is regarded as a more substantive level. From a practical point of view, if we can explain well the living arrangement between couples and their parents, we have grasped the major part of the variation of household composition.

We realize that the determinants of living arrangement are complex. Some factors tend to push people to live together; some others may push people to live apart; and some other factors may have contradictory impacts on living arrangement. The discussion here is only a much simplified one. The socio-economic factors, such as educational level, income level, occupation, and other modernity characteristics, etc., will be taken into account when analysing living arrangement.

We shall start the discussion with the relationship between couple's educational level and living arrangement.

1. Educational level and modernity

Educational level may influence living arrangement by way of three channels, that is, its influences on ideological values or modernity, on occupation, and on income level.

The higher the modernity, the higher are the needs of striving for freedom, independence, and self-realization. This motivates the tendency of living apart from parents or brothers. This might particularly fit Goode's theory of the relation between modernity and conjugal family.

The higher the educational level, the more is the probability to get a professional job, and the less the probability to stay in agricultural industry or family business. The relationship between educational level and migration should also be considered here.

Educational level may influence living arrangement by way of the increase of income. The increase of income may decrease the economic need of coresidence, especially that of pooling consumption.

In order to make clear the actual mechanism of the effect of educational level, we put some economic and modernity factors into the models together with educational level, and to compare the different models.

In Table 13, the result of MCA shows that the higher the husband's educational level, the less likely is the coresidence with parents for couples. Even if other variables are controlled, the relation still remains the same. We can, therefore, believe that the relationship between educational level and living arrangement exists.

In addition, comparing model 1 and model 2, it is shown that the beta-square value of year decreased when educational level was added into the model, that is, the variation of educational level can explain a part of the variation of

Table 13. The Relationship Between Living Arrangement and the Socio-Economic Factors and Modernity: A Multiple Classification Analysis of Living Arrangement Between Couples and Husband's Parents

	Model1: YEAR + HAGE + DURMAR + BORDER + MODN		Model2: YEAR + HAGE + DURMAR + BORDER + HEDU + MODN		Model3: YEAR + HAGE + DURMAR + BORDER + HEDU + HOCCU + INCO		Model4: YEAR + HAGE + DURMAR + BORDER + HEDU + HOCCU + INCO + MODN	
	N = 9672 Mean = 0.5066 R-square = 0.0855 adj. R-sq = 0.0838 F(18,9653) = 50.115		N = 9670 Mean = 0.5066 R-square = 0.0916 adj. R-sq = 0.0895 F(23,9646) = 47.302		N = 9641 Mean = 0.5071 R-square = 0.1860 adj. R-sq = 0.1834 F(31,9609) = 70.828		N = 9641 Mean = 0.5071 R-square = 0.1901 adj. R-sq = 0.1871 F(31,9609) = 64.402	
Factors	Eta-square	Beta-square	Eta-square	Beta-square	Eta-square	Beta-square	Eta-square	Beta-square
YEAR	0.0158	0.0154	0.0158	0.0060	0.0157	0.0133	0.0157	0.0109
HAGE	0.0093	0.0047	0.0093	0.0038	0.0092	0.0009	0.0092	0.0011
DURMAR	0.0063	0.0027	0.0063	0.0078	0.0063	0.0222	0.0063	0.0228
BORDER	0.0386	0.0383	0.0386	0.0418	0.0383	0.0325	0.0383	0.0326
HEDU	--	--	0.0116	0.0076	0.0117	0.0018	0.0117	0.0029
INCO	--	--	--	--	0.0964	0.0938	0.0964	0.0881
HOCCU	--	--	--	--	0.0518	0.0210	0.0518	0.0194
MODN	0.0238	0.0225	0.0238	0.0165	--	--	0.0237	0.0049
Factors	%	adj.%	%	adj.%	%	adj.%	%	adj.%
YEAR								
1973	56.76	54.91	56.75	54.04	56.77	56.63	56.77	56.02
1980	51.02	51.37	51.04	51.58	51.04	50.26	51.04	50.40
1986	41.31	43.64	41.31	44.67	41.31	42.47	41.36	43.20
HEDU								
illiterate	--	--	60.65	59.95	60.81	47.86	60.81	47.22
literate	--	--	51.10	50.11	51.10	41.98	51.10	41.38
primary u	--	--	53.85	53.27	53.96	45.92	53.96	45.20
primary-g	--	--	54.29	53.40	54.38	49.80	54.38	49.20
middle	--	--	49.00	49.40	48.95	52.29	48.95	52.57
college	--	--	38.33	40.87	38.46	53.19	38.46	54.70
INCO								
low	--	--	--	--	73.39	69.77	73.39	69.08
moderate	--	--	--	--	58.84	60.19	58.84	59.87
middle	--	--	--	--	38.53	39.94	38.53	40.22
high	--	--	--	--	21.42	18.73	21.42	19.81
NA	--	--	--	--	63.76	62.51	63.76	62.33
HOCCU								
professio	--	--	--	--	40.62	48.38	40.62	48.62
manager	--	--	--	--	41.88	45.91	41.88	46.01
secretary	--	--	--	--	45.36	50.45	45.36	50.76
salesman	--	--	--	--	47.54	45.28	47.54	45.23
service	--	--	--	--	33.72	37.56	33.72	38.07
skill work	--	--	--	--	48.73	48.71	48.73	48.80
unskill wk	--	--	--	--	53.08	50.13	53.08	49.95
farmer	--	--	--	--	73.85	65.50	73.85	64.89
no job	--	--	--	--	52.10	40.58	52.10	41.62
MODN								
low	57.30	57.11	57.30	55.89	--	--	57.36	53.22
moderate	57.50	57.33	57.52	56.58	--	--	57.54	53.82
middle	50.89	50.75	50.87	50.63	--	--	50.92	50.96
modern	43.27	43.76	43.27	44.64	--	--	43.31	48.06

* The figures of variables age, duration of marriage, and birth order were omitted.

** YEAR: year of survey; HAGE: husband's age; DURMAR: duration of marriage; BORDER: husband's birth order; HEDU: husband's educational level; INCO: income level; HOCCU: husband's occupation; MODN: wife's modernity.

living arrangement in different years. So the change of the educational level is supposed to be one of the causes of the nuclearization trend.

When husband's occupation and the average income of household were added into the models, the effect of husband's educational level seems to decline in terms of the variation range and the value of beta-square. This implies that educational level yields its effects on living arrangement mainly by its influences on occupation and income level.

The importance of wife's educational level is no less than that of husband's according to the analysis not presented here. However, since we would select one from the two closely related variables to put into a model, the husband's educational level was selected. The choice is because that the variation of wife's educational level is smaller than that of husband's, and wife's educational level is usually lower than husband's.

2. Modernity

According to Goode's theory, modern ideological value may have important effect on the composition of nuclear household and the change of ideological value can explain the prevailing of nuclear household pattern.

Unfortunately, we did not have a complete measurement of modernity or ideological value. We measured the wife's modernity in terms of some indicators at hand, such as the attitude toward male-female role, the decision-making of marriage, geomancy belief, attitude toward religious rituals, and willingness of living together with married children in the future. This is only a rough scale of modernity.

Table 13 shows a regular relation between wife's modernity and living arrangement. The higher the modernity, the less likely is the coresidence. The values of beta-square of wife's modernity are higher than 0.01 when occupation and income level are not added into the models. However, when the two

factors are added, its value of beta-square decreases below 0.01 and the variation among subgroups decreases. It is possible that the relation between modernity and living arrangement is partially spurious.

Furthermore, when wife's modernity was added into the model, the effect of husband's educational level did not change significantly. It perhaps means that educational level did not mainly yield its effects on living arrangement by way of its influence on or relation with modernity.

Despite the modernity scale constructed here, we may analyze some other factors which, in our opinion, imply, to some extent, the modernity, too.

When we put the residence area, rural-urban living experience, ethnicity, and religion into the models respectively, which we did not present here, we found that the urban residents, those who had less or none rural-area living experience, mainlanders, and Christian (including Catholics) are more likely to live apart from their parents. These results all suggest the existence of the relationship between modernity and living arrangement. In short, the more modern, the more likely is to live apart. However, all these pseudo-modernity factors show only weak relations with living arrangement.

3. Occupation

Occupation may influence living arrangement by way of income level, geographical mobility, and need of collective production. For those who have higher income level and spatial mobility, and less need of collective production, they will be more likely to live apart from parents and married brothers. Hence, It is supposed that people working in agricultural industry or traditional family business are more likely to live together with their relatives, and that professional workers are more likely to live away from parents and brothers.

Table 13 shows that the agricultural workers tend to live together with parents. The unskilled workers have similar tendency. The professional men

and service workers are actually most likely to live apart from parents. The difference exists after adjusting for the effects of other variables. Hence, the relationship between occupation and living arrangement can be confirmed to some extent.

Besides, the tables which are not presented here show that when husband's occupation was added into the model, the variation of different years decreased and the beta-square value of year decreased, too.

Other unrepresented tables also show that occupation is related to the living arrangement among married brothers, and the change of occupation structure can explain partly the variation over years.

According to these evidences, we may tentatively conclude that the change of occupation structure might be one of the reasons of the nuclearization trend.

Wife's occupation should have similar impact on living arrangement. However, the variation of wives' occupations is smaller than that of husband's, and husband's occupation is generally more important than wife's in terms of its status and subjective judgement, so wife's occupation was not put into the model in Table 13.

4. Income level

Income level, especially average income level of household, can be regarded as an important index of wealth. A man of high income level stands on an advantageous position to realize his ideal or dream. In other words, he has less limitations on his goal-attainment behavior, for example, to live apart from parents. On the other hand, he is also able to live together with parents, if he wants.

As a matter of fact, it is difficult to know for sure what the ideal of living arrangement nowadays is. It is said that the ideal household type of Chinese in

the traditional time was a "big family". But many evidences show that people become more and more individualistic and willing to live alone. Is the "big-family" ideal still persistent? If not, what is the new ideal living arrangement? What would one choose to do with more abundant purchasing power?

Table 13 shows that the proportions of coresidence significantly vary among different income-level groups. The higher the income, the lower is the proportion of coresidence. For those who are classified into the lowest income level group, over 70% of them live together with their parents. But for those who belong to the highest income level group, only around one-fifth of them live with their parents. The range of variation did not decrease after adjustment. Hence, there seems to be a negative relationship between coresidence and income level.

This finding may suggest that at least a large part of the people in Taiwan do not keep the traditional ideal of big family. Or more complexly, there may be different ideal household types among different income-level people.

V. SUMMARY AND DISCUSSION

The study tries to clarify the changes in marriage pattern and family structure in the recent decades in Taiwan.

The main data used are the four KAP surveys of 1967, 1973, 1980, and 1986 conducted by the Taiwan Provincial Institute of Family Planning. In addition, data of the young women surveys of 1971 and 1978, conducted by the same Institute, are also used mainly for the analysis of changes in marriage. Data from the Demographic Factbook of Taiwan-Fukien Area are analyzed somewhere as supplementary parts.

The empirical data support that there actually have been some significant changes in marriage pattern and in family structure.

With regard to changes in marriage, it is evidenced that young people obtained more and more autonomy in the decision of marriage, were freer in mate selection activities, and were less prohibited in premarital sex. The parents' authority in the decision of marriage obviously declined.

The situation may be advantageous to the development of a new orientation of family structure, that is, a shift from parent-children centered to husband-wife centered pattern.

Although young people become freer in marriage decision, they tend to get married later. Data of age-specific first marriage rate show that first marriage rate of women under 30 and over 40 declined in last decades.

The promotion of educational level and higher proportion of employment, especially for women, were related to the delaying of marriage. Since the promotion of educational level continues and the proportion of female employment keeps increasing, the trend of marriage delaying will probably continue.

People are more likely not only to get married later, but also to terminate their marriages by divorce. The crude divorce rate increased from the late 1960s. The age-specific divorce rate increased for every age group under 50.

Those who had higher educational level and worked in the tertiary industries were more likely to divorce. Since the educational level continues to improve, and the proportion of the tertiary industry workers continues increasing, we may expect that divorce rate will keep rising, too. If it is the case, then the single-parent family or broken family may also increase in the future.

From the changes in marriage pattern, we expect some probable trend of family change. It seems that family structure is becoming more vulnerable. The tendencies of late marriage, higher divorce rate, and the decline of parents' authority may tend to weaken the cohesiveness of family.

The data show that the proportion of nuclear household increases and that of complex household decreases in the recent two decades. Both facts cannot be fully explained by demographic transition. When number of married brothers is controlled, the proportion of nuclear household still increases. Couples also tend to live apart from their parents earlier. Besides, it appears that the willingness of living with husband's family has declined. The nuclearization trend seems to be a substantive behavioral-level change.

Next, the proportion of old parents who live together with married children keeps declining. It may be an important message showing that the traditional principle of living arrangement – parents living with at least one married child-- has been shaken.

Furthermore, the proportions of coresidence with married brothers currently or after the marriage declined, too. It may be another indicator that the authority of old parents is declining.

Almost all of the results evidence the nuclearization trend of household composition. The nuclearization trend is not only a change of manifest behavior in living arrangement, but is also a change of attitude or ideas about family relationship.

However, viewing from the reverse side, the traditional pattern of living arrangement is still maintained to some extent. The change in household composition is not so dramatic.

The change of household composition is related to the change in educational level, modernity, occupation, and income level. Among the factors, educational level and modernity seem to be minor in determining the living arrangement and household composition, compared to occupation and income level.

According to the results of multivariate analyses, economic factors seem to

be more important in the change of household composition in the recent two decades, perhaps because that there had been a fair proportion of people who wanted to live alone but were limited by the economic conditions. The limitation was liberated by the improvement of income level in recent decades. So the current close relationship between economic factors and living arrangement or household composition is more or less transient. We may expect that the effects of the ideological values will become more explicit and significant from a long-term view.

Perhaps it is not fair to strictly separate modern ideological values from the industrialized social structure, which is partly the result of the former or covers them as its content, and say that the values or ideas are not the important factors. Wholly speaking, the changes in family structure are deeply related to the industrialization and modernization process. There are mutual cause-effect relationship between them.

According to the above discussion, it may be acceptable to expect that the family structure will become more and more vulnerable in the future, that is, more easily to collapse. In that case, the government or the section of social welfare is supposed to assume a heavier duty to take care of members of the broken family. Besides, the elderly people are more likely to live alone in the future. Therefore, the problem of taking care of the elderly people is also worth considering.

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CHAPTER 5. IMPACT ON POPULATION QUALITY

IMPACT OF FAMILY PLANNING PROGRAM ON POPULATION QUALITY IN KOREA

.....*Sang Young Lee*

IMPACT OF THE FAMILY PLANNING ON POPULATION QUALITY — THE CASE OF TAIWAN

.....*Ming-Cheng Chang*

IMPACT OF FAMILY PLANNING PROGRAM ON POPULATION QUALITY IN KOREA

*Sang Young Lee**

I. INTRODUCTION

Fertility in Korea has drastically dropped during the last three decades, from 6.0 in 1960 to 1.6 in 1988. The fertility decline in the 1980s was striking enough to dilute the policy makers' concern and public interests not only in population growth but in population itself. Responding to the unanticipated fertility decline in 1980s, some had been even skeptical about the survey statistics until the change was confirmed by a preliminary evaluation of 1990 census. They now became apprehensive that the fertility rate might soon make a reverse turn before the zero population growth is actualized. Another group of population researchers are concerned more about the structural problems generated by an abrupt fertility change than about the size of population.

Their different emphases and prospects are based on the contrary assumption of future fertility change as well as the optimal size of population. The former group sees that the Korean population is already far above the optimum level in its size, and that the present low fertility is only a passing phenomenon forced by strong birth control policies in early 1980s. They, therefore, argue that fertility will boost only if the government stops extensive and intensive supports for family planning. The latter group of researchers argues that the population size is not so relevant in an industrial society as in the past agricultural society, and that population movement has a kind of inertia to

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persist in present status and direction of change. This means there will be no reounce of fertility rate in the foreseeable future.

Whichever position one takes, he or she has perceived that population studies should turn their research leads from purely "quantitative" to more or less "qualitative" aspect of population. And it is recommended that population policy makers take more consideration to "qualitative aspect" of population with a multi-dimensional perspective so that the population policy may meet the situation of a post population transition era characterized by the stabilized low fertility/mortality rates and the consequent population aging.

The human capital has been the most important resource in Korea during last several decades when the country has achieved its remarkable socio-economic development. Supplied with cheap and generous labor force, the labor-intensive industries has played a pulling power of the Korean economy. Now the present situation is quite different from the past. There is neither cheap labor supply nor well-paying market any more. Because of its small land with very limited natural resources, Korea cannot but promote its quality of work forces in order to survive in the competitive international economy and catch up with other industrialized countries. That is another demand for "quality of population."

The concept of "population quality" is one of the most evasive and ambiguous concepts; there can be as many definitions as those who refer to. UN' s definition, ' reference to all sorts of social and personal characteristics ' encompasses both hereditary and acquired traits, and physical, mental and social capability. To be more specific, the quality is related to social variables like income and education as well as biological ones like height and weight, sight and so on. A person's mental, physical and social abilities are determined by four factors of heredity, environment, development, and learning, and their interactions. And the aggregation of them among a population becomes the population quality. This means that the population quality is scarcely referred on individual level. But the term, population quality, is aggregational by its nature, and one must quantify when he or she evaluates it. In a word, population

quality is not qualitative but quantitative.

How to quantify or measure the quality of a population is another confusing question. The population quality, of course, might be indicated by level of health and productivity of the population. If so, how can these levels be quantified ? It is not only impossible but meaningless to list all items which plausibly indicate the levels of health and productivity. Only theory and data availability determine the contents of the population quality. In addition, investigator's subjective value also has a crucial influences on selecting indicators for population quality, ordering the selected indicators by the importance and so forth.

The population quality has been usually associated with genetics and eugenics for long time. This association has discouraged investigations of population quality because eugenic involves a very ethically sensitive judgement; which are desirable hereditary traits (genes); who have the most such traits; and who are to be blocked off to have offsprings. The application of advanced genetic engineering to human being seems to become sooner or later a grave and urgent issue.

On the other hand, sociobiological studies have tried to disentangle the complex mechanism of and evolution of human population. How differential reproductive pattern in a human society affects its succession of generation after generation has been one of their main theme.

Besides, demographic studies focus their examination on how the differential fertility affects its "population composition" in next generation, which circumscribes the concept, "population quality". In this kind of study, conceptual tools like "selection" and "anti-selection" borrowed from sociobiologists are employed without re-definition. If the fertility differential affects the population composition and results in a better population quality, then they say there is selection, and vice versa.

Fertility reduction obviously has certain impact on population quality in the long run on the aggregational level through generational succession. In addition, it is assumed that fertility decline-in other words, reduction of child-affects directly and positively the population quality at the individual level. It is likely to improve maternal child health and increase investment for children's health and education and so on. Changes in spacing and timing of child-bearing usually accompanied by fertility reduction are not invalid to the health of mother and child.

It is well known that the national family planning program in Korea had contributed to reducing the fertility rate, and its pattern and differentials. From this premise, this paper pursues the impact of the decreasing number of children on (1) the maternal and child health, and (2) overall change in population composition.

II. IMPACT OF FAMILY PLANNING ON MATERNAL AND CHILD HEALTH

The impact of family planning activities on health is linked to changes in reproductive performance. Through family planning, some pregnancies will occur at different points in time and others will be prevented. The health impact of family planning occurs primarily through the following effects on human reproduction : 1) the avoidance of unwanted pregnancy, 2) a change in the number of children ever born to a mother, 3) variation in the intervals between pregnancies or births, and 4) changes in the time at which births occur (WHO, 1970).

In the following parts, in terms of these effects, the health impact of family planning is discussed.

A. Effect of Family Planning on Induced Abortion

Unwanted pregnancies are very likely to be terminated as induced abortions, which possibly pose a great risk to maternal health if improperly practiced. A

family planning KAP survey conducted in 1988 (Moon et. al., 1988) shows that around 80 per cent of the last unwanted pregnancies experienced by the currently married women (6,515) aged 15-44 were artificially aborted, and that 17.5 percent of the last induced abortions experienced by these women were followed by complications or side effects.

One of the major functions of family planning is the prevention of induced abortion as well as unwanted or undesired pregnancies, which means getting rid of the source of a possible risk for maternal health. There are some studies on the effects of family planning practice on the prevention of induced abortions. Koh, Foreit and Lee (1979) estimated that around 132,729 induced abortions had been averted by sterilization between 1962 and 1976, and thus that a case of sterilization had averted approximately 1.16 abortions on the average. A recent study (Lee, 1989) estimated that a case of sterilization would avert 0.91 abortions. These effects are obviously reflected on the time trend of induced abortion rate. As can be seen in Table 1, total marital induced abortion rate had continuously increased until 1979, and has been decreasing thereafter. Much of the decrease in the prevalence of induced abortions since 1979 can be attributed to a drastic increase in sterilization practice rate during the same period. The sterilization practice rate had remained relatively low, below 10 per cent, until 1976, but it jumped up to 20.4 per cent in 1979 and has increased at a good pace since then.

Table 1. Trend of Induced Abortion Rate and Sterilization Rate

Year	Total Marital Induced Abortion Rate	Contraceptive Practice Rate(%)	Sterilization Rate(%)
1971	1.7	24.5	3.3
1973	2.1	36.3	4.6
1976	2.3	44.2	8.3
1979	2.9	54.5	20.4
1985	2.1	79.4	40.5
1988	1.6	77.1	48.2

Source : Hyun-Sang Moon et. al., 1988 National Fertility and Family Health Survey, Korea Institute for Population and Health, 1989

There would be many factors that made possible such a decrease in the induced abortion rate. Of them, the rapid increase in sterilization practice rate seems to have been most influential.

Temporary methods would also have their own shares in preventing unwanted pregnancies and induced abortions. Of course, proper use of the methods should be ensured for the effective prevention of unwanted pregnancies and abortions. Anyhow, when those of temporary methods are included, total effects of family planning would be larger than the figures shown above.

B. Effect of Fertility Changes on MCH

Maternal mortality and morbidity have been shown to have a significant association with high parity. Some studies suggest that the risk of such complications of pregnancy and delivery as prolapsed cord, accidental hemorrhage, abnormal presentation/position of the fetus, and rupture of the uterus, increases as parity progresses, and that the incidences of certain diseases, such as diabetes and nutritional deficiency resulting in anaemia, calcium deficiency and difficulties in breast-feeding, are associated with high parity (WHO, 1970).

A study on the effects of family planning on MCH in Korea (Lee and Choi, 1978) showed that number of pregnancies had negative relationship with maternal health. According to the findings in this study, the more pregnancies a woman had experienced, the longer she had been exposed to diseases.

Another study (Kong et. al., 1987) showed that the more children a woman had, the more likely to have chronic diseases she was. As Table 2 shows, the proportion of women with chronic diseases was 12.7 per cent among women with 0-2 children ever-born, and 30.9 per cent with 3 or more children.

The gap in the proportions may be partly due to the difference in age structures and economic conditions between the two groups. That is, women with 3 or more children-ever-born are likely to be older, so they are more exposed

Table 2. Proportion of Women with Chronic Diseases by Number of Children Ever Born

No. of CEB	No. of Women	Proportion of Women with Chronic Diseases(%)
0-2	1,463	12.7
3 or more	1,550	30.9

Source : Se-Kwon Kong et. al., Changes in Family Structure in Korea, Korea Institute for Population and Health, 1987

to risks of getting chronic diseases than those with 0-2 children-ever-born. And since low income families, in general, have a larger number of children, the women with three or more children-ever-born are more likely to belong to low income families than those with 0-2 children-ever-born. So their health status may be poorer, and their chance to get chronic illness may be higher than those of their counterpart. In spite of these effects, however, it seems that the effect of the number of children-ever-born was one of the dominant factors for maternal health.

It is also widely known that the number of pregnancies and births commands unambiguous influences on the health condition of the foetus and child. In general, foetal death rate, still birth rate, perinatal and infant mortality rise with parity. Child's intelligence and developmental progress in walking, speaking and physical growth of height and weight and so on, have negative correlation with parity. Some studies in U.S.A. showed the negative correlation of the child's IQ score and the number of siblings. Lee and Choi's study (1979) in Korea showed that newborns' average weight was higher in the group of children whose mothers had experienced one or two pregnancies, than in the group with 3 or more pregnancies. As Table 3 presents, the average weight of the group with one or two pregnancies was higher at birth, and four and eight months after birth, than that of the group with 3 or more pregnancies.

Table 3. Weight Development of Newborns by No. of Pregnancies

No. of Pregnancies of Mother	Weight (Kg) at		
	Birth	4th Mon.	8th Mon.
1 - 2	3.54	7.23	8.40
3 - 5	3.29	6.76	8.04
6+	3.50	7.21	7.75

Source : Sea-Baick Lee and Boo-Oak Choi, A Study on the Impact of Family Planning on Family Health, Korean Institute for Family Planning, 1978

C. Effect of Birth Spacing on MCH

According to Omran (1971), too closely or broadly spaced pregnancies work as a detriment for maternal and child health. A certain period is required for mother to recover from physical, mental and emotional tension which pregnancy causes. Although it can not be uniformly determined how long it may take to recover, it is a prevailing opinion that less than two years or more than five years is not desirable for both mother and child health (Hong, 1978).

Timing of pregnancy or birth is also an important factor for maternal and child health. Maternal age at conception or birth-giving is closely related to maternal mortality, complications of pregnancy and delivery, foetal deaths, and congenital abnormalities of newborns.

Lee and Choi's study (1978) showed the effects of birth interval and mother's age at birth on newborn's weight and morbid period of mother. As is presented in Table 4, the longer the birth interval was and the younger a mother was at birth, the heavier weight a child had. And Table 5 shows that the shorter birth interval a mother had, during the longer period she was exposed to disease.

Table 4. Weight of Children by Birth Interval and Maternal Age at Birth

	at Birth	4 Months after Birth
<u>Birth Interval (mon.)</u>		
37+	3.40	7.28
16 - 36	3.43	6.88
15-	2.80	7.60
<u>Mother's Age at Birth</u>		
29-	3.31	7.15
30 - 34	3.55	6.87
35+	3.20	6.60

Source : Sea-Baick Lee and Boo-Oak Choi, op. cit.

Table 5. Morbid Period of Mothers by their Birth Interval

Birth Interval (months)	Morbid Period (months)
37+	1.86
16 - 36	2.38
15-	2.11

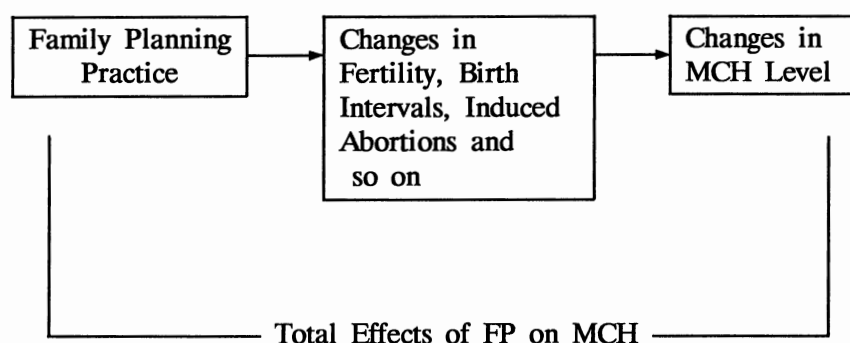
Source : op. cit.

Note : The morbid period is total period during which women remained as deprived of labour force because of chronic diseases, congenital diseases, inborn or attained abnormalities, mental diseases, and other slight illness, between Jan. 1970 and Sep. 1977.

D. Trend of Fertility, Birth Interval and Mothers' Age at Birth.

As in the following diagram, total contribution of family planning to maternal and child health is determined by the two components: 1) the extent to which family planning affects number of pregnancies or births, birth intervals, induced abortions, and timing of birth in mother's life span; and 2) the extent to which these variables, in turn, affect maternal and child health.

The second component was discussed in the previous sections, if roughly. In this section, for the first components, trend of fertility and birth intervals over



the last two or three decades is discussed.

Such a rapid decline in TFR and desired completed number of children as is shown in Table 6 may have made a great contribution to maternal and child health.

Table 6. Trend of Total Fertility Rate and Desired Completed Number of Children

Year	Total Fertility Rate	Desired Completed No. of Children
1960	6.0	-
1971	4.7	-
1974	3.6	-
1976	3.2	3.4
1978	-	3.3
1982	2.7	-
1984	2.1	-
1985	-	2.5
1987	1.6	-
1988	-	2.2

Source : Hyun-Sang Moon et. al., op. cit.

Table 6 shows that total fertility rate (TFR) had drastically decreased from

6.0 in 1960 to 1.6 in 1987. And desired completed number of children (no. of living children + no. of children parents want more) had also declined from 3.4 children in 1976 to 2.2 children in 1988.

The trend of birth intervals, presented in Table 7, may have exerted negative impact on maternal and child health. Both the first and the second birth intervals continuously decreased. The average first birth interval of women who got married between 1948 and 1955 is 30.2 months, and that between 1981 and 1985 is 11.8 months. The second interval is much more important than the first interval in terms of maternal and child health because, while the first interval is the period between marriage and (the first) birth, the second interval is the period between births. The average second interval in the marriage cohort of 1978-55 is 36.0 months, but it is less than two years, 21.7 months, in the cohort of 1981-1985. According to the opinion that less than two years is unfavorable for maternal and child health (Hong, 1978), this trend of birth intervals may have served as a negative factor for maternal and child health, offsetting some of the positive effects resulting from the decrease in fertility.

Table 7. Changes in Birth Intervals

Marriage Cohort	unit : months	
	First Interval	Second Interval
1948 - 55	30.2	36.0
1956 - 60	27.1	32.0
1961 - 65	21.6	30.3
1966 - 70	18.6	28.5
1971 - 75	16.7	28.5
1976 - 80	15.0	26.7
1981 - 85	11.8	21.7

Source : Sea-Baick Lee, Analysis of Birth Interval in Korea, Fertility Changes in Korea, 1987

Another problem to be noted here is that not all of these changes in fertility and birth intervals were made possible by family planning practice alone. Socio-economic conditions may also have been involved. But it is quite difficult

to sort out separate effects of family planning and socio-economic conditions on the changes in fertility because family planning prevalence and socio-economic conditions are closely interlinked.

Employing multivariate analyses and cross-sectional data, a study (Moon et. al., 1986) tried to separate the impacts of family planning on the fertility from those of changes in socio-economic conditions. According to the findings in the study, 11 per cent of variation in fertility levels was explained by family planning achievement (measured in Couple Years of Protection), and 2.6 per cent by socio-economic variables such as educational level of women, percentage of farming population, mass media exposure, percent of paved road, number of physicians and so on. And 60 per cent of variation in family planning achievement was in turn accounted for by family planning program input, and 7.6 per cent by socio-economic conditions. It is, therefore, estimated that 6.5 percent of fertility differentials were explained by family planning program input, and 3.4 per cent by socio-economic conditions.

Another attempt to separate the contributions of related factors to fertility was made by Han and Cho. According to their study (1987), until the early part of the 1970s, the increase in age at marriage had been a dominant factor for fertility decline, but since the very beginning of the 1980s, family planning has been a major source of fertility decline. As is presented in Table 8, while the proportion of births averted by the effect of increase in age at marriage decreased from 81.8 per cent in 1960 to 17.5 per cent in 1984, the proportion of births averted by contraceptive practice increased from 9.0 per cent to 50.3 per cent during the same period.

The findings of these studies are enough to show that family planning has been one of the major factor for the fertility decline which have occurred during the last three decades.

Table 8. Proportion of Births Averted by Related Factors, According to Bongaarts Model

Factors	unit : %			
	1960	1970	1979	1984
Increase in Age at Marriage	81.8	38.6	18.2	17.5
Induced Abortion	9.2	29.4	39.8	32.2
Contraceptive Practice	9.0	31.9	31.9	42.0
Total	100.0	100.0	100.0	100.0

Source : Sung-Hyun Han and Nam-Hoon Cho, Changes in Induced Abortion and Its Impact on Fertility, Fertility Changes in Korea, KIPH, 1987

III . FAMILY PLANNING AND CHILD QUALITY

Attained human capital such as education, vocational skills and other types of qualifications is also an important component of population quality. But relationship between family planning program and children's future attainments in human capital, which determine the quality of population in next generations, is not readily clear. In this section, only a possible way family planning program, as is distinguished from family planning, may affect children's attainments in human capital, is proposed very briefly.

Children's access to a chance for human capital is associated with many factors such as social investments for educational infrastructures, parents' demand, aspiration and investments for a higher level of children's quality, and so on. Of these factors, parents' demand and investment work as a path through which family planning program relates to the quality of children.

Demand for children can be broken down into two types of demands, for

the number of children and for the quality of children. In general, as socio-economic development proceeds and overall income level increases, the demand for number of children decreases, and the demand for child quality increases. And changes in the price for child number (the direct cost for basic needs for children's subsistence) and in the price for child quality (the cost for a higher level of nutrition, health, education and other aspects of human capital) cause the demands to change, in their counter directions. Besides these factors, there are many factors, whether economic or non-economic, including family planning program, involved in the demands for child quantity and quality.

Family planning program activities can be broadly divided into two categories, provision of contraceptive services and demand management activities, that is, IE&C activities. Activities of contraceptive service provision may not affect individual decision making and demand for children. But if well designed and implemented, IE&C activities can affect parent's demands, preference and decisions with respect to child number and quality. The idea that a small number of children with good quality is better than a large number of children with poor quality has been an unchanged basis on which family planning slogans have been developed in Korea. Although how much these IE&C activities have been effective is not measurable, it cannot be denied that such IE&C activities have made a contribution to an increase in the demand for child quality.

On the other hand, the increase in the demand for child quality does not necessarily lead to an increase in the actual level of child quality. There is an intervening factor, parents' capability of investing for their children. But in Korea, the rapid socio-economic development and overall increase in income level during the last three decades may have contributed towards the expansion of both social and individual ability to invest, and hence towards fulfilling the increased demand for children with a higher level of human capital.

IV. FAMILY PLANNING PROGRAM, SELECTION AND POPULATION QUALITY

Another way family planning affects the quality of population is through fertility differentials among social classes. Even if there is no structured efforts for birth control like family planning program, people may adopt contraception spontaneously to control their fertility according to their desired demand schedule for children. In a static view, high income families are, in general, more likely to use contraception and tend to have a smaller desired number of children and lower fertility. In a dynamic view, as development proceeds, benefits of the development are not equally distributed unless value distribution system of society is well structured. In such situation, upper social classes benefit more than lower classes. This fact means that lower classes are subject to less change in their social and economic conditions, so are given less motivations to change their fertility. Even if family planning program is introduced, unless more concentration is put on lower classes, there is a good possibility that fertility will decline more rapidly in upper classes than in lower classes. This situation leads to an increase in the relative proportion of children from lower classes. In view of this, we assume that if there had not been family planning program, fertility of high social classes would have declined more rapidly than that of low classes.

Another assumption is that children in low social classes have less access to human capital than those in high classes. Although a survey (KGP, 1983) shows that parents in high income families have stronger aspiration for education of their children than those in low income families, there is no sound statistics concerning this point in Korea. But this study simply accepts this assumption for the purpose of comparing the results with the Taiwan study, which finds this assumption holds in Taiwan. Based on these two assumptions, it can be said that an increase in the relative proportion of offsprings of low classes leads to a decrease in population quality as a whole, and that a more rapid decline in fertility in low social classes will be an effect of family planning program to population quality.

This study uses educational level as an instrument for classifying social class. The criteria by which social classes will be divided cannot be determined in terms of mathematical or statistical configuration, but it is a matter of value judgement of society. It can vary from society to society. In Korea where educational attainments have quite a close relationship with income level, occupation and so on, it seems that education level can be taken as an indicator for social class.

Tables 9 and 10 present the results of family planning KAP surveys on the trend of several fertility-related indicators, from 1968 when national family planning program was in its early stages, to 1988 when the Korean fertility transition is evaluated to have been completed. The data in the table are only for currently married women aged 15-44 (aged 35-44 in Table 10) who want no more children.

As can be seen in Table 9, contraceptive practice rate of those who did not want children anymore was 31.6 per cent in 1968, it increased to 84.2 per cent in 1988. With this rapid increase in overall level, the differentials among educational groups have also greatly reduced, leaving only slight gaps in 1988.

Number of living children and ideal number of children decreased almost by half during the same period. They decreased more in the groups of middle school or below, than in those of high school or above, reducing the gaps among the groups. Between 1968 and 1988, number of living children decreased by 1.67 and 1.37 in the groups of primary or no schooling and middle school respectively, but it decreased by around 1.0 in the group of college or above. Ideal number of children also decreased more in the lower groups of education. And contraceptive practice rate increased much more in the groups of middle school or below than in the groups of high school or above.

Excess fertility indicators (number of living children or number of live births minus ideal number of children) rather increased, especially in the groups of high school or below, during the same period. This is mainly because ideal

**Table 9. Trend of Fertility-Related Indicators by Education Level
(Women aged 15-44 who did not want children any more)**

	Primary or below	Middle School	High School	College or Above	All
<u>Contraceptive Practice Rate</u>					
1968	28.40	40.60	47.40	59.00	31.00
1976	53.20	61.70	69.40	71.20	57.40
1988	84.80	85.80	81.80	85.40	84.20
<u>No. of Living Children</u>					
1968	4.53	3.64	3.23	3.02	4.32
1976	3.94	2.99	2.69	2.49	3.56
1988	2.86	2.27	1.93	1.96	2.27
<u>No. of Live Birth</u>					
1968					
1976	5.30	3.89	3.46	3.06	4.93
1988	4.25	3.13	2.82	2.58	3.82
	2.96	2.30	1.94	1.96	2.31
<u>Ideal No. of Children</u>					
1968					
1976	4.00	3.57	3.33	3.00	3.89
1988	3.03	2.60	2.43	2.43	2.85
	2.15	1.96	1.88	2.07	1.99
<u>Excess Fertility(1)</u>					
1968					
1976	0.91	0.54	0.57	0.57	0.85
1988	1.10	0.67	0.52	0.36	0.96
	0.99	0.61	0.47	0.46	0.66
<u>Excess Fertility(2)</u>					
1968					
1976	1.50	0.74	0.74	0.60	1.40
1988	1.40	0.79	0.63	0.47	1.21
	1.10	0.64	0.49	0.46	0.70
<u>Educational Structure</u>					
1968					
1976	81.10	9.40	7.40	2.10	100.00
1988	66.20	18.40	12.50	2.90	100.00
	25.00	31.90	31.10	9.10	100.00

Source : Data Base of 1968, 1976, 1988 National Fertility and Family Health Surveys, KIHASA

Note : Excess fertility(1) is number of living children less ideal number of children, and excess fertility(2) is number of live birth less ideal number of children.

**Table 10. Trend of Fertility-Related Indicators by Education Level
(Women aged 35-44 who didn't want children any more)**

	Primary or below	Middle School	High School	College or Above	All
<u>Contraceptive Practice Rate</u>					
1968	26.70	37.50	50.90	59.30	29.60
1976	52.50	64.60	73.30	78.40	56.50
1988	82.90	88.10	89.90	94.10	87.20
<u>No. of Living Children</u>					
1968	5.01	4.30	3.67	3.81	4.86
1976	4.41	3.65	3.14	3.08	4.17
1988	3.20	2.72	2.40	2.40	2.79
<u>No. of Live Birth</u>					
1968	5.97	4.71	3.98	3.89	5.72
1976	4.84	3.89	3.36	3.19	4.54
1988	3.34	2.78	2.43	2.41	2.87
<u>Ideal No. of Children</u>					
1968	4.18	3.92	3.48	3.26	4.10
1976	3.20	2.82	2.60	2.65	3.08
1988	2.19	2.00	1.93	2.18	2.07
<u>Excess Fertility(1)</u>					
1968	1.20	0.82	0.83	0.75	1.16
1976	1.44	1.06	0.83	0.56	1.32
1988	1.23	0.92	0.74	0.65	0.97
<u>Excess Fertility(2)</u>					
1968	2.02	1.17	1.05	0.76	1.89
1976	1.83	1.23	1.02	0.67	1.66
1988	1.35	0.97	0.78	0.67	1.05
<u>Educational Structure</u>					
1968	85.00	7.00	6.40	1.60	100.00
1976	75.60	13.40	9.10	1.90	100.00
1988	36.90	29.90	24.30	9.00	100.00

Source : Data Base of 1968, 1976, 1988 National Fertility and Family Health Surveys, KIHASA

Note : Excess fertility(1) is number of living children less ideal number of children, and excess fertility(2) is number of live birth less ideal number of children.

number of children decreased more rapidly than number of living children or live births. But this fact does not necessarily mean an increase in the number of unwanted children. People incessantly change their ideal number of children during their life spans. At the beginning of their reproductive lives, they might have an ideal number of children larger than the currently surveyed ones, and they may have reproduced their fertility according to it, so their accumulated actual fertility up to the time points of surveys can be higher than currently surveyed ideal number of children.

Similar picture is seen in Table 10, which presents the trend of fertility-related indicators, based on the women aged 35-44.

Based on the assumptions stated above, the data presented in both tables show that family planning program contributed to fertility decline more in low social classes than in high social classes, and hence to the quality of population.

V. CONCLUSION AND POLICY RECOMMENDATION

Population quality can be defined in terms of such characteristics as physical health, mental capacity and attained skill or qualifications. It is affected by the socio-economic environments which surround population, and by the dynamics which population holds in itself.

Socio-economic conditions cause population to change in its size, structure and quality. Its effects on population change is defined as endogenous because population itself composes a part of socio-economic condition. Population policy is another factor for population change. Population policy is rather exogenous in a sense that it intervenes in the process of autonomous dynamics of population, with a view to controlling the direction, speed and degree of the population change in a planned manner.

Family planning program is also a kind of intervention with a primary

purpose of activating and accelerating fertility decline, so its primary demographic effect is usually identified in terms of degree and speed of fertility decline. The fertility decline is, however, not a sole effect of family planning. Family planning does influence qualitative aspects of population in several ways. Its demographic achievements, that is, avoidance of unwanted pregnancies and induced abortions, planned birth intervals, decreased number of pregnancies and birth, and proper timing of births in mother's life span enhance both maternal and child health. This intrinsic relationship between FP and MCH poses a need for the integration of family planning and MCH programs.

It is shown that maternal morbidity decreases and child health (measured in weight at birth and its development since birth) increases, with adequately extended birth intervals, decreased number of children-ever-born and proper timing of birth. And even though there are no empirical data to support, it seems that family planning IE&C activities encourage couples to demand and invest more for the quality of their children in Korea.

As the Korean fertility has fallen down to well below replacement level (1.6 in TFR), the Korean government is trying to shift the primary objectives of family planning program, from the expansion of contraceptive prevalence to the provision of qualitative services in contraceptive supply, IE&C, follow-up activities or whatever. It is suggested that for this policy re-orientation, family planning and MCH programs be effectively integrated all from policy making at central level to policy implementation at peripheral levels. And more concentration should be put on IE&C activities, particularly on education to encourage proper use of contraception to avert unwanted pregnancies coming from improper use of contraceptives. Ongoing IE&C activities should be modified to be enough to help couples make rational decision in relation to their demands and investments for children's attainments in human capital.

In the light of what have been discussed so far, it can be said that the Korean Family Planning Program has contributed to the promotion of population quality in terms of maternal/child health and human capital, as well as the

fertility reduction. In current situation where its primary demographic goal, that is, fertility reduction, has been achieved, family planning program is being granted less attention. However, family planning program should rather be given more attention for the systematic integration with MCH program and the further development of program measures aiming at the provision of qualitative services.

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IMPACT OF THE FAMILY PLANNING PROGRAM ON POPULATION QUALITY – THE CASE OF TAIWAN

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Abstract

This study focuses on changes in educational fertility differentials in Taiwan through which effect of the national family planning program on population quality is explored. A socioeconomic model is developed in which fertility attitude, actual fertility, infant and child mortality, fertility regulation, and excess fertility are used as variables to explain social fertility differentials. The models are evaluated by analyzing data through the use of regression analysis from a series of Taiwan KAP surveys conducted during 1965-1986.

The empirical results show that high and substantial different ideal family size, actual fertility, and excess fertility persisted among different educational statuses in the early stage of family planning program in Taiwan. On the other hand, contraceptive use tended to be lower for every educational status, but its differentials were great. Thereafter, along with active family planning promotion and rapid socioeconomic development, substantial reductions in attitudinal and actual fertility, and excess fertility were found in each educational stratum. Furthermore, contraceptive use became universal and saturated in each educational status of women, especially for lower statuses, through which the population quality has been improved. However, educational fertility differentials tended to be greater in the later stage of the family planning program, and created reverse checks of population quality. Nevertheless, if changes in

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educational structure are taken into consideration, the family planning program has a positive effect on population quality in Taiwan.

I. INTRODUCTION

Taiwan's net reproduction rate fell to 1.0 in 1983 and has been below-replacement fertility since 1984. In 1964, when the island-wide family planning was promoted, the total fertility rate was 5.10 and the net reproduction rate was 2.27. The sustained fertility decline began earlier. In 1955, the total fertility rate was 6.55 and the net reproduction rate was 2.82. Taiwan has completed the fertility aspect of the demographic transition during the twenty years after the intensive family planning program was implemented. In the meantime, Taiwan has reached a perfect contraceptive society or universal contraceptive -- the goal which most developing countries with population and family planning policies try to achieve, thanks to the rapid socioeconomic development and successful promotion of family planning in Taiwan in the past two decades.

Along with fertility transition in Taiwan, the nature of population problems is now shifting from high fertility to other issues. Also, the central concerns of family planning program among policy makers, professionals, and scholars have been shifting from population growth to population quality. Accordingly, four-year new family planning program was implemented in July 1990. The new program has put more emphasis on raising the quality of population through genetic measures including contraceptive services for the disabled and low-status people, medical care for the infertile couples, intensive educational campaign and counseling for the youth, and also participation of family planning workers in the detection of chronic diseases for the elderly so as to realize the idea of happy family.

Since the new program has started to emphasize its social welfare goals, it is important to examine whether social fertility differentials have been enlarged over time during the period of intensive promotion of family planning for

fertility reduction. If so, it seems desirable to put more efforts on low-status people in order to prevent "reverse checks of population". The main purpose of this paper is to trace major trends in social differential fertility from early stage to later stage of the family planning program when fertility transition took place, by using a series of Taiwan KAP survey data collected by the Taiwan Provincial Institute of Family Planning. The term "quality of population" in this paper refers only to social aspect, rather than genetic aspect.

II. THEORETICAL FRAMEWORK AND BASIC HYPOTHESES

There are at least two theoretical orientations which have guided the research in this area. One of these stems from a sociological viewpoint. Individually, a person's quality or characteristics is developed through interactions among genetic inheritance, environment, maturity, and learning. Of these, genetic inheritance comes from parents and is a basic component of a person's quality. However, an individual's percepts, motives, habits, concepts, ability, and attitude are formulated through the unique organization of relatively enduring psychological characteristics possessed by an individual, as revealed by his interaction with environment.

The family is viewed as an important environment for early socialization. Parents respond and adjust to the characteristics of the child. As such, it can be inferred that children from superior family background would be better in early socialization than those from lower status. On the other hand, research from social mobility indicates a strong relationship of son's education and occupation with those statuses father owns. This suggests that identification is part of the normal process of growing up and becoming a mature adult. Through it, ideals are taken on by the growing child, and models of behavior are transmitted from one generation to the next. In addition, the father with higher occupational status will have more expectation of his son's education. Therefore, many studies have indicated that there is a strong association between son's educational achievement with father's occupational status (Duncan, 1961; Harbison, 1966).

However, in the open-class society, vertical mobility is possible and probable from the bottom to the top. Of course, there has never been a completely open-class structure. The United States, for example, tends toward an open-class system, but ascribed criteria, such as race, sex, and family position, are applied in many areas. Nevertheless, in developing countries with the open-class structure, socioeconomic development is usually accompanied with educational development and education is an important qualification to achieve a higher occupational status. More equal educational opportunities imply higher vertical mobility as to lighten the strong association between son's educational achievement and father's occupational and educational status. Indeed, due to the rapid socioeconomic and educational development in the past thirty decades, the effect of father's educational and occupational status on son's status has been getting smaller (Chen, 1980; Moot, 1981; Hsu, 1982). However, as compared with other countries such as the United States, United Kingdom, Haiti, and Costa Rica, the association of son's educational achievement with father's occupational status is stronger in Taiwan (Wang, 1980).

From a viewpoint of human capital, labor quality depends on the amount of human capital spent on an individual through which different professional knowledge and skills are acquired so as to improve labor productivity and earnings. In more specific, individual workers earn different amounts because they have acquired different skills and different amounts of training, have completed different amounts of schooling, have made decisions to move from one labor market to another, have different endowments of ability, and vary in health and strength. All these variables affect labor quality. The famous economist, Backer, has indicated that human capital is extremely important determinants of individual and family economic welfare (Backer, 1962). In the past, many economists regarded that individual differences in economic welfare are due to physical capital owned by the individuals, but now many empirical research results consistently show the importance of an individual's knowledge, attitude and habits.

As indicated previously, research of social mobility in Taiwan has

consistently indicated that an individual's educational and occupational achievement is associated with family background. However, this association has declined with Taiwan's rapid socioeconomic and educational development in the past two decades, but still exists. Other things being equal, it can be said that children from a family of higher status are more likely to have educational and occupational achievement than those from a lower status so as to increase their productivity and earnings through which the quality of life can be improved and a higher level of life goal can be pursued.

Based on the above theoretical orientations, we now turn to light on the meaning of population quality from a macro viewpoint. Essentially, the term "population quality" used in this study refers to a component of population composition or the distribution within a population of one or more individually carried traits or attributes. The individual characteristics to which this composition refers include education and occupation. However, the composition is a static one and subjective to change due to the effects of births, deaths, migration, and socioeconomic development in the dynamic process. The main purpose of this paper is concerned with changes in social fertility differentials over time in Taiwan and its causes.

A. Family Planning Promotion and Social Fertility Differentials

In general, factors which are usually proposed as inducing the transition from natural to regulated fertility include natural fertility conditions as well as infant and child survival prospect, demand for children, general attitudes toward fertility regulation, delivery constraints involving availability of fertility regulation and access to contraceptive services. The motivation for fertility regulation is viewed as stemming from concerns about the excess potential family size over desired family size. Attitudes toward fertility regulation embrace both approval or disapproval of family planning in general and subjective considerations about appropriateness of specific practices. Access pertains to the costs in time and money resulting from the availability of birth control services and supplies. In general, fertility regulation is a function of the degree of motivation,

favorableness of attitudes, and extent of access.

More specifically, two factors affecting the motivation for fertility regulation are potential family size (C_n) and desired family size (C_d). The potential family size is the potential output of surviving children a woman would have if no fertility regulation were practiced, that is the product of a couple's natural fertility (N) and its infant and child survival rate (S). On the other hand, the desired family size or the demand of children is the number of surviving children a woman desires in a perfect contraceptive society where the market and psychological costs associated with fertility regulation were negligible. The demand for children is determined by taste, income, and price as those usually considered in the economic theory of household decision-making. According to the Easterlin framework, it is plausible that fertility becomes regulated when an excess family size ($C_n > C_d$) situation exists and the disadvantages of unwanted children are greater than costs of fertility regulation (CR) including both subjective disadvantages of regulation and the economic costs of control. Other things being equal, we may say that the larger this excess, the greater is the potential burden of unwanted children, and consequently the greater is a couple's motivation to limit their fertility. It is worth stressing the two-sided view here of how motivation is determined. In words of Easterlin (1981):

Often motivation is simply identified with desired family size and it is assumed that only if this decreases will motivation grow. In fact, however, an increase in potential family size can increase motivation, even if desired family size remains constant, because it increases the potential number of unwanted children. An increase in potential family size might arise from an increase in a couple's natural fertility, improved chances of child survival, or both.

On the other hand, however, a couple with a positive value of $C_n - C_d$ or the excess family size will not deliberately control its fertility, if CR is higher than the disadvantages of unwanted children. Thus, unregulated fertility may be a rational response to the couple's basic situation.

In contrast to the above excess fertility situation, the value of $C_n - C_d$ may be negative, indicating a couple is in a "deficit fertility" situation, that is, that they are unable to produce as many children as they want. In this case, there is clearly no motivation to limit fertility (and, as a result of poor fecundity, little motivation to regulate for purposes of spacing), so that actual fertility is determined by potential fertility.

Following this model, women in a given population can be grouped on the basis of demand of children, actual number of surviving children, fertility regulation or nonregulation, as the typology below shows:

a. Natural Fertility

1. $C_n = C < C_d$: Deficit fertility
2. $C_n = C = C_d$: Actual = Desired fertility
3. $C_n = C > C_d$: Excess fertility

b. Regulated Fertility

4. $C_n > C < C_d$: Deficit fertility
5. $C_n > C = C_d$: Perfect contraceptors
6. $C_n > C > C_d$: Excess fertility

Where: C refers to children surviving

C_n refers to the potential output of surviving children

C_d refers to desired family size

There are several cases needed to be noted here. One of these is women with excess fertility under a natural fertility regime (group 3) who may be said to be "irrational" in the sociological sense of never using available means to reach their desired goals. According to the Easterlin model it is plausible that this group of women has never practiced any form of birth control because the market and psychological costs associated with fertility regulation are relatively higher than the disadvantages of having unwanted children. On the other hand, it sounds also irrational for the fourth group who have ever experienced fertility regulation under a deficit situation. Theoretically, however, these may be spacers,

or they may have deficit fertility as a result of infant and child mortality, or they may be subfecund women who were ignorant of any fecundity impairments when regulation was practiced.

What are possible changes when a society is induced from natural fertility to regulated fertility? We try to use the theory sketched above to discuss it. For a society in absence of deliberate fertility regulation or in a natural fertility regime, social fertility differentials are mainly determined by income through which different fecundability and outcomes of pregnancy may be operating. In general, higher income people tend to have higher ability of conception with less fetal failures simply because of better nutrition and hygiene so as to have better health conditions. As this, fertility among high status women tends to be higher than that of low status ones. In addition, infant and child mortality is generally lower among higher status families. As such, it can be said that social differential fertility in a natural fertility regime is favorable for positive checks of population in the sense of more births coming from better families at a given birth cohort.

However, due to socioeconomic development and availability of modern contraceptives, the social differential fertility in the natural fertility regime is modified. Before government is involved in family planning promotion, higher educated people will start to practice contraception for reducing their excess fertility or unwanted children simply because they are more likely to learn about contraceptive knowledge through mass media. This means that the social differentials existed in the natural fertility regime have to be changed. The more modern components of the population (as measured by education, urbanization, and occupation) tend to have fewer children, and thus would create a reverse check of population.

Such a reverse check of population in modern social fertility differentials would be becoming more serious if government has not taken action for reducing fertility of low status group. Fortunately, in the early stages of demographic transition, many developing countries have started to carry out family planning

program in order to reduce its high population growth rates resulted from high fertility and declining mortality.

What is the impact of family planning promotion on social fertility differentials ? Essentially, the family planning promotion can lead to raise the overall contraceptive practice rate, especially for low-status women, so as to reduce educational or other social differentials in contraceptive practice which in turn affects excess fertility among different social classes. Other things being equal, social differentials in excess fertility would be smaller simply because the increase in contraceptive practice among lower status women is greater than that of higher ones. However, this orientation seems not reasonable. In the process of modernization, structural changes in education and other socioeconomic characteristics have to take place and individual differences in those characteristics tend to be greater, which in turn affect social differentials in both attitude and actual fertility. Under such circumstances, the excess fertility for low-status women will be reduced substantially if a couple's fertility behavior is not affected by their parents' expectation. On the contrary, if fertility behavior for low-status couple can be influenced by factors such as replacement effect, insurance effect and parents' expectation, educational differentials in excess fertility will be reduced along with intensive promotion of family planning, but social fertility differentials might be becoming greater.

In sum, from a dynamic viewpoint, the determinants of social differentials in attitude and actual fertility, and excess fertility include natural fertility conditions as well as infant and child survival prospect, demand for children, contraceptive use and others. Following the rationale sketched above, the basic hypotheses and analytical framework on the basis of Taiwan's situation are discussed in the following sections.

B. Basic Hypotheses

In the early stages of the island-wide family planning in Taiwan in 1965, there was only a sizable minority of all women who had at some time used a

form of deliberate fertility regulation (Chang, Freedman, and Sun, 1987). This article traces major trends in educational fertility differentials from the early stages to the later stages of fertility transition in Taiwan through which the impact of family planning program on the quality of population can be explored. The basic hypothesis is that the Taiwan's family planning program is able to lower market costs by increasing information through home visits and group meetings made by the family planning fieldworkers and IEC programs. On the other hand, the program also provides low-cost contraceptive services at the public and qualified private clinics. Additionally, the program lowers subjective costs by lending legitimacy to the notion of practicing birth control. All of these efforts will lead to an increase in overall fertility regulation. Whatever fertility regulation is either for limiting or spacing, maternal and child health, especially for those from lower social status and remote areas, can be improved. Other things being equal, if infant and child mortality is reduced among low-status group because of contraceptive practice, there will be more increase in the family size of lower social class and thus creates a reverse check of population.

However, such a reverse check of population will be shifting to a positive check if traditional norm about family size of low-status people is modified and their excess fertility is reduced. An alternative hypothesis is that the reverse check of population will still exist if changes in social differentials in desired family size and excess fertility keep a same pace.

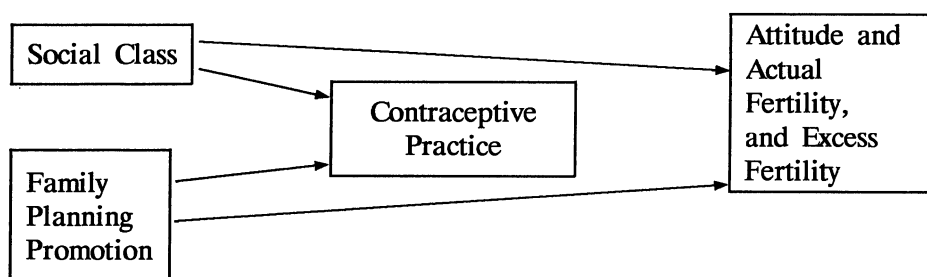
It should be noted that along with Taiwan's modernization and intensive family planning promotion, people's psychic and market costs about fertility regulation have been substantially reduced and become negligible during the study period. In the meantime, research by Chang (1986) indicated that at the early stages of fertility transition in Taiwan, both the motivation and cost factors act together upon women's fertility, while at the later stages, the motivation factor plays a large role in distinguishing between the natural and regulating population, and costs of fertility regulation, reducing to a minimum, drop out as a crucial variable. Furthermore, during the period of intensive promotion of family planning in Taiwan, socioeconomic structures have been changing

dramatically due to the rapid modernization. Therefore, even if the alternative hypothesis is accepted, the reverse check of population will be modified when the changes in socioeconomic structure are taken into account.

C. Data, Analytical Framework, and Study Variables

The present analysis is based primarily on data from four island-wide interview surveys made in 1965, 1970, 1980, and 1986. Each of the four surveys was based on probability samples chosen to represent all married women in childbearing years in Taiwan, except for few townships in which most of Taiwan's small aborigine population live. Since the four surveys are strictly comparable only for women in the age groups 20-39, the present analysis is restricted to this age range. Information was obtained on each woman's fertility history, her desired number of children, and her attitude toward, knowledge of, and use of family planning. In addition, measures of socioeconomic status, family values and living arrangements, and modern consumer orientation patterns were included. The response rates for the four surveys ranged from 86% to 93%.

Based on the preceding theoretical orientations and basic hypotheses, the dependent variables considered in this study include norm about family size, children ever born, living children, excess fertility, and contraceptive practice rate, while urban-rural residence, occupation, and education are served as independent variables. Using the four KAP survey data, the basic hypotheses were tested through the use of regression analysis. The conceptual model for this analysis is shown as follows:



Out of the variables considered in this study, some are needed to note here. Norm about family size represents number of desired children which is measured by the question "If you were just getting married and could have just the number of children you want, how many would you like to have had when you are through having children ? About age 45 ? ". This attitude fertility can serve as a reasonable basis for estimating future fertility behavior for aggregates of women in Taiwan (Freedman, Hermalin, and Chang, 1975). The excess fertility is defined as the difference between number of children ever born/number of living children and desired number of children. As for education, it is not only the most important social indicator, but is also very powerful to fertility differentials.

III . EMPIRICAL RESULTS

To test the basic hypotheses, the ideal data are those who have completed their family size. However, most of the Taiwan's KAP respondents are in their childbearing ages at time of interview. Alternatively, two subsamples including married women aged 20-39 who wanted no more children and those aged 35-39 who were near the close of their reproductive years were drawn for the analysis.

Table 1 displays the mean values of attitude and actual fertility, excess fertility, and contraceptive practice classified by education and year of survey for married women aged 20-39 who wanted no more children. The data covered all fertility and contraceptive practice situation from the early stages of Taiwan's fertility transition to 1986, when the NRR was below 1.0.

In 1965 (the second year of the island-wide family planning program), the mean number of children ever born for married women aged 20-39 who wanted no more children was 4.89. This figure is very close to the total fertility rate of 4.825 calculated from birth registration in that year. Thereafter, due to delayed marriage and more contraceptive practices, the dissimilarity has become greater, as figures below show:

Year	Childrem ever born (1)	Total fertility rate (2)	Difference (3)=(1)-(2)
1965	4.89	4.83	0.06
1970	4.36	3.63	0.73
1980	3.21	2.25	0.96
1986	2.91	1.68	1.23

The infant and child survival rate can be obtained by comparing number of living children and children ever born as shown in Table 1. In 1965, this survival rate was as high as 93% which further increased to 98% in 1986. As expected, during 1965-1986, excess fertility existed, but had reduced significantly. In 1965, the excess fertility in terms of the difference between number of children ever born/desired number of children and living children was 0.91 and 0.65 which reduced to 0.56 and 0.29 in 1986 respectively. Such reductions were mainly due to the rise of contraception practice from 42.6% in 1965 to 96.6% in 1986.

Obviously, in the early stage of fertility transition in Taiwan, many women had motivation of fertility regulation because of pressure derived from the excess fertility, and the pressure would be greater if it is derived from the excess potential fertility described previously. As such, more than two-fifths of women had ever used any form of contraception by 1965.

Although there were substantial declines in the attitude and actual fertility, and the excess fertility, and substantial increases in contraceptive practice rates, educational fertility differentials seem to be enlarged. For example, educational variations in desired children and children ever born measured in terms of standard deviation was 13 and 24 in 1965 which increased to 25 and 41 respectively in 1986 (not shown in Table 1). A similar situation was found for living children and excess fertility. However, educational differentials in contraceptive practice rate had become smaller and negligible in 1986 (Table 1).

Table 1. Mean Number of Ideal Family Size, Live Births, Living Children. Excess Fertility and Contraceptive Practices by Education of Married Women 20-39 Who Wanted No More Children in Taiwan

Indicator	Educational Level				
	Total	None	Primary	Junior	Senior or +
Ideal No. of Children					
1965	3.97 (2,457)	4.08 (1,434)	3.92 (779)	3.56 (161)	3.11 (83)
1970	3.74 (1,469)	3.92 (797)	3.81 (501)	3.39 (109)	3.32 (62)
1980	2.88 (2,689)	3.27 (460)	2.92 (1,566)	2.73 (268)	2.34 (395)
1986	2.54 (2,211)	3.06 (151)	2.71 (1,174)	2.41 (359)	2.11 (527)
Live Births					
1965	4.89 (2,485)	5.10 (1,443)	4.76 (796)	4.16 (163)	3.81 (83)
1970	4.36 (1,475)	4.62 (801)	4.27 (503)	3.60 (109)	3.15 (62)
1980	3.21 (2,727)	3.89 (479)	3.30 (1,584)	2.86 (269)	2.28 (395)
1986	2.91 (2,270)	3.48 (158)	3.23 (1,210)	2.64 (366)	2.22 (536)
Living Children					
1965	4.53 (2,485)	4.67 (1,443)	4.45 (786)	4.10 (163)	3.71 (83)
1970	4.14 (1,270)	4.35 (347)	4.09 (710)	3.52 (118)	3.11 (95)
1980	3.13 (2,727)	3.71 (479)	3.23 (1,584)	2.83 (269)	2.25 (395)
1986	2.86 (2,271)	3.47 (158)	3.15 (1,211)	2.65 (366)	2.19 (536)
Excess Fertility (Live Births – Ideal No. of Children)					
1965	0.91 (2,457)	1.02 (1,434)	0.82 (779)	0.61 (161)	0.49 (83)
1970	0.55 (1,266)	0.69 (345)	0.47 (708)	0.21 (118)	0.08 (95)
1980	0.31 (2,689)	0.55 (460)	0.37 (1,566)	0.12 (268)	0.07 (395)
1986	0.36 (2,210)	0.40 (151)	0.51 (1,173)	0.21 (359)	0.11 (527)

Source : Taiwan KAP Surveys

Table 1. Mean Number of Ideal Family Size, Live Births, Living Children. Excess Fertility and Contraceptive Practices by Education of Married Women 20-39 Who Wanted No More Children in Taiwan (continue)

Indicator	Educational Level				
	Total	None	Primary	Junior	Senior or +
Excess Fertility (Living Children – Ideal No. of Children)					
1965	0.56 (2,457)	0.59 (1,434)	0.51 (779)	0.55 (161)	0.40 (83)
1970	0.33 (1,469)	0.42 (797)	0.28 (501)	0.14 (109)	0.08 (62)
1980	0.24 (2,689)	0.40 (460)	0.30 (1,566)	0.09 (268)	-0.09 (395)
1986	0.29 (2,211)	0.31 (151)	0.42 (1,174)	0.16 (359)	0.07 (527)
% Ever Used Contraceptive					
1965	42.60 (2,485)	32.90 (1,443)	50.40 (796)	70.60 (163)	81.90 (83)
1970	77.20 (1,475)	71.50 (801)	80.50 (503)	92.70 (109)	95.20 (62)
1980	91.80 (2,727)	90.20 (479)	91.80 (1,584)	90.70 (269)	95.40 (395)
1986	96.60 (2,270)	96.20 (158)	97.10 (1,210)	95.10 (366)	96.60 (536)
Current Contraceptive Practice Rate					
1965	37.70 (2,485)	28.60 (1,443)	45.00 (786)	63.80 (163)	74.70 (83)
1970	64.60 (1,475)	58.40 (801)	87.00 (503)	83.50 (100)	91.90 (62)
1980	81.10 (2,726)	82.70 (479)	82.20 (1,583)	79.60 (269)	82.50 (395)
1986	94.70 (2,094)	95.00 (140)	94.40 (1,135)	95.70 (325)	94.70 (494)
Educational Structure					
1965	100 (2,485)	58.06 (1,434)	32.03 (796)	6.55 (163)	3.34 (83)
1970	100 (1,475)	54.30 (801)	34.10 (503)	7.38 (109)	4.20 (62)
1980	100 (2,727)	17.56 (479)	58.08 (1,584)	9.86 (269)	14.48 (395)
1986	100 (2,270)	6.96 (158)	53.30 (1,210)	16.12 (366)	23.61 (536)

Source : Taiwan KAP Surveys

The results are consistent with that of the family planning service statistical data (Sun, et. al., 1979.)

Now we turn to examine trends and educational differentials in attitude and actual fertility, excess fertility, and contraceptive practice for married women aged 35-39 who were near the close of their reproductive year. As shown in Table 2, the patterns were similar to those observed in Table 1. The difference is that the mean values of attitude and actual fertility for married women aged 35-39 are greater than that of those wanting no more children. This is due to the fact that the later group includes younger married women who have modern attitude and actual fertility behavior.

As an aid in summarizing the changes in educational differentials in attitude and actual fertility, excess fertility, and contraceptive use, we have used simple and multiple analysis. The regression analysis was done for each of cross-sectional data separately. For simple regression analysis, each of the fertility measures is used as a dependent variable and education as independent variable. As for multiple regression, we have used type of residence and husband's occupation as control variables by adding them to the equation. The results are displayed in Table 3 and Table 4.

Either for married women aged 20-39 who wanted no more children or married women aged 35-39 in each of the KAP survey data (1965, 1970, 1980, and 1986), education was negatively associated with attitude and actual fertility, and excess fertility, but positively correlated with contraception. This means that higher educated women had modern norm about family size, lower actual fertility, and less excess fertility, while they were more likely to practice contraception. Furthermore, with the exception of contraceptive use, the zero-order correlation (r) and the regression coefficient (b) tended to be greater over time. This indicates that the effect of education on attitude and actual fertility has been getting greater. Again, such statistical results imply that educational differentials in attitude and actual fertility, and excess fertility have been enlarged over time in Taiwan.

Table 2. Mean Number of Ideal Family Size, Live Births, Living Children, Excess Fertility and Contraceptive Practices by Education of Married Women 35-39 in Taiwan

Indicator	Educational Level				
	Total	None	Primary	Junior	Senior or +
Ideal No. of Children					
1965	4.27 (1,169)	4.40 (700)	4.22 (355)	3.78 (79)	3.22 (35)
1970	4.03 (647)	4.15 (342)	4.07 (228)	3.50 (46)	3.26 (31)
1980	3.13 (854)	3.38 (241)	3.14 (457)	2.95 (62)	2.52 (94)
1986	2.75 (775)	3.09 (81)	2.85 (486)	2.68 (77)	2.21 (131)
Live Births					
1965	5.53 (1,197)	5.76 (709)	5.41 (372)	4.73 (81)	3.83 (35)
1970	4.87 (653)	5.24 (347)	4.71 (229)	4.07 (46)	3.23 (31)
1980	3.68 (882)	4.10 (259)	3.69 (467)	3.27 (62)	2.67 (94)
1986	3.19 (804)	3.51 (85)	3.38 (507)	2.97 (79)	2.38 (133)
Living Children					
1965	4.99 (1,197)	5.11 (709)	4.96 (372)	4.62 (81)	3.69 (35)
1970	4.58 (653)	4.87 (347)	4.46 (229)	3.91 (46)	3.19 (31)
1980	3.56 (882)	3.93 (259)	3.57 (467)	3.37 (62)	2.61 (94)
1986	3.13 (804)	3.45 (85)	3.30 (507)	3.04 (79)	2.30 (133)
Excess Fertility (Live Births – Ideal No. of Children)					
1965	1.25 (1,169)	1.37 (700)	1.17 (355)	0.91 (79)	0.54 (35)
1970	0.83 (647)	1.07 (342)	0.64 (228)	0.57 (46)	-0.13 (31)
1980	0.52 (854)	0.66 (241)	0.54 (457)	0.48 (62)	0.15 (94)
1986	0.44 (775)	0.43 (81)	0.53 (486)	0.31 (77)	0.16 (131)

Table 2. Mean Number of Ideal Family Size, Live Births, Living Children. Excess Fertility and Contraceptive Practices by Education of Married Women 35-39 in Taiwan (continue)

Indicator	Educational Level				
	Total	None	Primary	Junior	Senior or +
Excess Fertility (Living Children – Ideal No. of Children)					
1965	0.71 (1,169)	0.71 (700)	0.71 (355)	0.80 (79)	0.40 (35)
1970	0.54 (647)	0.70 (342)	0.39 (228)	0.41 (46)	-0.06 (31)
1980	0.40 (854)	0.48 (241)	0.42 (457)	0.40 (62)	0.09 (94)
1986	0.34 (775)	0.37 (81)	0.43 (486)	0.21 (77)	0.08 (131)
% Ever Used Contraceptive					
1965	38.80 (1,197)	30.00 (709)	45.40 (372)	64.20 (81)	88.60 (35)
1970	74.30 (653)	68.00 (347)	78.60 (229)	91.30 (46)	87.10 (31)
1980	91.70 (882)	88.00 (259)	92.70 (467)	90.30 (62)	97.90 (94)
1986	94.00 (804)	91.80 (85)	94.70 (507)	92.40 (79)	94.00 (133)
Current Contraceptive Practice Rate					
1965	34.30 (1,197)	25.00 (709)	40.90 (372)	64.20 (81)	82.90 (35)
1970	62.30 (653)	55.90 (347)	66.80 (229)	76.10 (46)	80.60 (31)
1980	84.10 (882)	80.70 (259)	84.40 (467)	85.50 (62)	91.50 (94)
1986	94.40 (719)	94.60 (74)	93.70 (457)	98.60 (69)	95.00 (119)
Educational Structure					
1965	100 (1,197)	59.23 (709)	31.97 (372)	6.76 (81)	2.92 (35)
1970	100 (653)	53.13 (347)	35.06 (229)	7.04 (46)	4.74 (31)
1980	100 (882)	29.36 (259)	52.94 (467)	7.02 (62)	10.65 (94)
1986	100 (804)	10.57 (85)	63.65 (507)	9.82 (79)	16.54 (133)

Source : Taiwan KAP Surveys

Table 3. Mean Number of Ideal Family Size, Live Births, Living Children, Excess Fertility and Contraceptive Practices by Education of Married Women 20-29 in Taiwan

Indicator	N	Mean or %	r	b**
Ideal No. of Children				
1965	2,423	3.96	-0.17*	-0.11
1970	1,469	3.81	-0.21*	-0.18
1980	2,679	2.88	-0.34*	-0.27
1986	2,009	2.55	-0.37*	-0.33
Live Births				
1965	2,423	4.87	-0.20*	-0.13
1970	1,469	4.36	-0.23*	-0.21
1980	2,679	3.19	-0.38*	-0.33
1986	2,009	2.96	-0.42*	-0.38
Living Children				
1965	2,423	4.52	-0.16*	-0.10
1970	1,469	4.14	-0.21*	-0.19
1980	2,679	3.11	-0.37*	-0.33
1986	2,009	2.91	-0.36*	-0.33
Excess Fertility (Live Births – Ideal No. of Children)				
1965	2,423	0.91	-0.12*	-0.08
1970	1,469	0.55	-0.14*	-0.12
1980	2,679	0.31	-0.19*	-0.17
1986	2,009	0.41	-0.16*	-0.15
Excess Fertility (Living Children – Ideal No. of Children)				
1965	2,423	0.55	-0.06*	-0.03
1970	1,469	0.33	-0.09*	-0.10
1980	2,679	0.23	-0.16*	-0.16
1986	2,009	0.34	-0.12*	-0.12
Ever Used Contraceptive				
1965	2,423	43%	0.28*	0.202
1970	1,469	77%	0.18*	0.166
1980	2,679	92%	0.045*	0.018
1986	2,009	100%	0	0
Current Contraceptive Practice				
1965	2,423	40%	0.275*	0.201
1970	1,469	65%	0.185*	0.175
1980	2,679	82%	-0.0114	-0.032
1986	2,009	95%	0.004	-0.003

* Significance at 5% level.

** Adjusted for type of area and husband's occupation.

Table 4. Mean Number of Ideal Family Size, Live Births, Living Children, Excess Fertility and Contraceptive Practices by Education of Married Women 20-39 in Taiwan

Indicator	N	Mean or %	r	b**
Ideal No. of Children				
1965	1,152	4.26	-0.20*	-0.12
1970	647	4.03	-0.23*	-0.19
1980	853	3.13	-0.30*	-0.26
1986	685	2.76	-0.31*	-0.24
Live Births				
1965	1,152	5.52	-0.21*	-0.12
1970	647	4.86	-0.28*	-0.25
1980	853	3.65	-0.29*	-0.24
1986	685	3.29	-0.37*	-0.28
Living Children				
1965	1,152	4.97	-0.14*	-0.06
1970	647	4.57	-0.25*	-0.23
1980	653	3.52	-0.27*	-0.23
1986	685	3.22	-0.31*	-0.24
Excess Fertility (Live Births – Ideal No. of Children)				
1965	1,152	0.71	-0.02	-0.02
1970	647	0.54	-0.13*	-0.13
1980	653	0.40	-0.09*	-0.07
1986	685	0.47	-0.13*	-0.10
Excess Fertility (Living Children – Ideal No. of Children)				
1965	1,152	1.26	-0.11*	-0.06
1970	647	0.83	-0.09*	-0.17
1980	853	0.52	-0.11*	-0.09
1986	685	0.54	-0.15*	-0.11
Ever Used Contraceptive				
1965	1,152	40%	0.26*	0.22
1970	647	74%	0.17*	0.148
1980	853	92%	0.094*	0.070
1986	685	100%	0.000	0
Current Contraceptive Practice				
1965	1,152	35%	0.287*	0.224
1970	647	63%	0.164*	0.145
1980	853	85%	0.072*	0.065
1986	685	95%	0.027	0.009

* Significance at 5% level.

** Adjusted for type of area and husband's occupation.

The question is why the educational differentials in attitude and actual fertility, and excess fertility have tended to be greater over time, though there were substantial declines in demand for children and actual fertility ? It would be possible that population has been becoming more heterogeneous along with the trend toward more education in Taiwan, and of course more diverse for attitude and actual fertility. Such an educational heterogeneity can be also used to explain the enlargement of the educational differentials in excess fertility as Taiwan has become a universal contraceptive society. Research by Chow (1983) indicated that factors affecting the excess fertility in terms of number of children ever born over number of desired children include contraceptive failures, son preference, sex composition, and child mortality perceptions, and these factors were negatively correlated with education. Also, lower educated people tended to have higher contraceptive failures, stronger son preference, more fears of child's death, and thus have higher excess fertility. Therefore, in the later stages of fertility transition in Taiwan, the association of education and the excess fertility turned out to be greater, although universal contraceptive practice was achieved.

In sum, in the early stages of fertility transition in Taiwan, educational differentials in attitude and actual fertility, and contraceptive use were substantial. If Taiwan's family planning program were not implemented at that time, the excess fertility for the lower status group would be greater, and thus create a reverse check of population. Fortunately, the intensive promotion of family planning in Taiwan has successfully reduced both psychological and market costs of fertility regulation, especially for the lower status groups and people in remote areas. As such, contraceptive use has become universal and saturated in each educational class, through which many unwanted children were prevented, especially for lower status group, and thus the quality of population has been improved. However, in the later stages of fertility, educational differentials in attitude and actual fertility, and excess fertility tended to be greater, and thus created reverse checks of population quality. Nevertheless, if changes in educational structure are taken into account, family planning has a positive effect on the quality of population in Taiwan.

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APPENDIX

LIST OF PARTICIPANTS

Korean Participants

1. Dr Ehn-hyun Choe, Vice President, Korea Institute for Health and Social Affairs (KIHASA)
2. Mr. Moon-sik Hong, Director, Population Research Division, KIHASA
3. Dr. Key-won Cheong, Senior Researcher, Population Research Division, KIHASA
4. Dr. Mee-kyung Suh, Senior Researcher, Population Research Division, KIHASA
5. Mrs. Moon-hee Seo, Senior Researcher, Research Planning Division, KIHASA
6. Mr. Sang-young Lee, Researcher, Population Research Division, KIHASA

Chinese Participants

1. Dr. Te-hsiung Sun, Chairman, Research, Development and Evaluation Commission, Executive Yuan
2. Mr. Yin-erh Chang, Deputy Commissioner, Department of Health, Taiwan Provincial Government
3. Department of Health, the Executive Yuan, ROC
Mr. Jeff Tsal, Director, Office of International Cooperation

Dr.(Ms.)Mei-shu Lai, Deputy Director, Bureau of Health Promotion and Protection

Ms. Tan-kuei Liu, Section Chief, Bureau of Health Promotion and Protection

Ms. Shu-jui Lo, Specialist, Bureau of Health Promotion and Protection

Ms. Sophia C.C. Juan, Specialist, Office of International Cooperation

4. Ms. Margaret L. Wang, Specialist, Manpower Planning Department, Council for Economic Planning and Development, Executive Yuan
5. Maternal and Child Health Association, Republic of China
 - Dr. Huo-yao Wei, Chairman
 - Dr. Chiung-lin Chen, Secretary General
 - Mr. Gwo-chieh Chou, Section Chief of General Affairs
 - Ms. Lili Chin, Clerk of General Affairs
6. Dr. Muh-fa Hwang, Director, Taiwan Provincial Institute of Maternal and Child Health
7. The Family Planning Promotion Center, Taipei City
 - Dr. Chien-dai Chiang, Director
 - Ms. Chieng-wen Wang, Junior Specialist
8. Dr. Tsan-cheng Lin, Director, the Family Planning Promotion Center, Kaohsiung City
9. Ms. M.N. Huang, Director, Taichung County Health Bureau
10. Taiwan Provincial Institute of Family Planning
 - Dr. Ming-cheng Chang, Director
 - Mr. Terry T.J. Kao, Deputy Director
 - Ms. Mei-heui Lee, Secretary
 - Dr. Harvey H.S. Lin, Chief, Research and Planning Division
 - Dr. Li Chi, Research Associate

Ms. H. L. Huang, Junior Specialist
Mr. T.Z. Wu, Chief, Data Processing Division
Mr. L.C. Chow, Research Associate
Mr. J.H. Chen, Chief, Education and Training Division
Mr. Y.H. Ong, Specialist
Ms. F.C. Lu, Chief, Supervision Division
Ms. M. J. Chow, Junior Specialist

Working Group (TPIFP)

Ms. M.H. Lee, Secretary
Ms. S.O. Liao, Chief, Accounting Office
Mr. J. Hsu, Chief, Personnel Office
Mr. L.T. Wang, Deputy Chief, Personnel Office
Mr. C.Y. Chien, Chief, Business Office
Mr. W.C. Liu
Mr. F.C. Hsiao
Ms. S.M. Kuo
Ms. Y. Chi
Ms. M.N. Wang

WORKSHOP SCHEDULE

The Third Workshop on Comparative Study of Population and Family Planning in the ROK and ROC Taipei/Taichung July 9-17,1991

July 9(Tue.)

- 18:20 Arrival at the CKS International Airport via KE 635 — to be met by
 Mr. G.C. Chou, the Maternal and Child Health Association, R.O.C.
- 20:00 Proceed to Taipei
- 20:40 Check in the China Hotel

July 10(Wed.)

- 9:00-10:30 Visit the Maternal and Child Health Association, R.O.C. (MCHA)
- 10:00-12:00 Visit the Department of Health, the Executive Yuan, Republic of
 China (DOH) — Briefing on Public Health in Taiwan Area, R.O.
 C. Courtesy Call on Dr. Y.T. Shih, Deputy Director-General,
 DOH
- 12:00-13:30 Lunch hosted by Dr. Shih
- 13:30-16:30 Depart for Chung-hsing New Village
- 16:30-18:00 Visit the Department of Health, Taiwan Provincial Government ,
 R.O.C. Courtesy Call on Dr.K.S. Lin, Commissioner
- 19:00-20:30 Reception hosted by Commissioner Lin
- 20:30 Check in the Park Hotel, Taichung

July 11(Thu.) WORKSHOP

- 9:00- 9:30 Welcoming remarks including introduction of participants and business — Mr. Y.E. Chang, Dr.M.C. Chang and Dr.E.H. Choe
- 9:30- 9:45 Recent Changes in the National Family Planning Program and Its Future Directions in the ROK — Mrs. Moon-hee Seo
- 9:45-10:00 Recent Changes in the National Family Planning Program and Its Future Directions in the ROC — Dr. M.C. Chang
- 10:00-10:30 Discussions and Comments
- 10:30-11:00 Coffee/tea break
- 11:00-11:15 Policy Implications of Family Planning Integration with Maternal and Child Health Program in the ROK — Mr. Moon-sik Hong
- 11:15-11:30 Policy Implications of Family Planning Integration With Comprehensive Health Program in the ROC — Dr. M. S. Lai and Ms. C. T. Soong
- 11:30-12:00 Discussions and Comments
- 12:00-14:00 Lunch hosted by Dr. M.C. Chang
- 14:00 Proceed to Snow Mountain Garden Farm
- 16:00 Arrive at Snow Mountain Garden Farm
- 18:00 Dinner

July 12(Fri.) WORKSHOP

- 9:00- 9:20 Social Support and Health Status of the Elderly in Korea — Dr. Mee kyung Suh
- 9:20- 9:40 Health and Living Status of the Elderly Population in the ROC — Dr. H. S. Lin and Mr. Y. L. Chuang
- 9:40-10:20 Discussions and Comments
- 10:20-10:40 Coffee/tea break
- 10:40-11:00 Changes in Marriage, Household and Family Structure Since 1960 in the ROK — Dr. Key-won Cheong.
- 11:00-11:20 Changes in Marriage, Household and Family Structure Since 1960 in the ROC — Dr. L. Chi
- 11:20-12:00 Discussions and Comments
- 12:00-14:00 Lunch

- 14:00-14:20 Impact of the Family Planning Program on Population Quality in the ROK — Mr. Sang-young Lee
- 14:20-14:40 Impact of the Family Planning Program on Population Quality in the ROC — Dr. M.C. Chang
- 14:40-15:20 Discussions and Comments
- 15:20-15:30 Coffee/tea break
- 15:30-16:30 Conclusion — Mr. Jeff Tsai and Dr. H.S. Lin
- 17:00 Return to Taichung and check in the Park Hotel

July 13(Sat.)

- 8:00 Depart for the Taroko Gorge National Park
- 11:30 Arrive at Li Shan
- 12:00-13:00 Lunch
- 13:00 Proceed to Tien Siang
- 17:00 Arrive at Hualien and check in the Astar Hotel
- 18:00 Dinner at the Aster Hotel

July 14(Sun.)

- 8.30-12:00 Visit the Taroko Gorge National Park
- 12:00 Lunch at the Astar Hotel
- 14:00-16:00 Visit the Kuan Luan Marble Ltd, Co.
- 16:30-18:00 Visit the Tzu-chi Buddhist General Hospital
- 18:00 Dinner at the Tzu-chi dining room

July 15(Mon.)

- 8:00 Depart for Taipei

July 16(Tue.)

- 10:00 Visit the Taipei Family Planning Promotion Center (TCFPPC) —

Call on Dr. C. T. Chiang, Director
12:00 Lunch hosted by Dr. Chiang, TCFPPC
2:00 Visit the National Palace Museum
18:00 Dinner hosted by Dr. H. Y. Wei, Chairman, MCHA

July 17(Wed.)

----- Departure for Korea