

Nepal's Demography

(WITH REFERENCE TO ITS RELATION WITH EDUCATION)

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Concept of demography:

Demography, as known today, is a scientific discipline which deals in the estimation and relating of various characteristics of Human Population along with the exploration of various Social-economic factors affecting the population phenomenon of the country. As in any scientific study, demography tries to analyse and give a clear picture of the principal causes and their effects related to population dynamics. The principal effects that may be identified in demographic studies are the vital statistics such as—Initial Population size, Fertility and mortality schedules, intrinsic growth rates etc.

The principal causes contributing to these effects are, however, the socio-economic and religious structure of the country. Some of the social factors related to population phenomenon are—Social and religious attitudes and obligations of people towards family and family size, urbanisation and industrialisation, 'Status of woman; educational attainment of the population etc. Therefore, to understand the 'Demography of a country,' the causes and effects mentioned above must be understood and estimated.

Causes of demographic phenomenon:

Since the causes for the effects are of paramount interest in demographic studies, some of the causes are briefly discussed in this section.

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Migration:

Apart from the inherent characteristics of the population, the vital statistics of a population are greatly affected by migration of the population. The theories, such as stable population theory, are applicable to population Phenomenon only if the magnitude of the migration is insignificant. In case of significant magnitude of migration, the population study becomes more complicated. In migration, three factors are to be considered i. e. iamigration (Those coming from other countries to settle in the country), out-migration (Those going from country to other countries to settle down) and Internal migration (Those migrating from one place to another within the same country).

Internal migrations also may be classified as:

1. Movement from one part of the country to another,
2. Movement from rural areas towards urban areas in the same part of the country, and
3. Movement away from the centres of Urban areas towards the suburbs.

Movement from rural areas to urban centres are the characteristic of most of developing countries whereas movement from centres of urban areas to suburbs is a particular feature of the developed countries.

Social factors and fertility:

Numerous studies made in many countries have shown that there is a significant relationship between the levels of social development and the fertility of the country.

Goldbern (1959, 1967), Blau and Duncan (1963) found that iustrialised societies exhibit lower fertility than agricultural societies.¹ It was also found in their studies that within both industrialised and less developed societies, the urban areas have lower age specific birth rate than the rural areas Further it was disclosed that the second generation urbanities have lower fertility levels than do urbanities who are farm migrants.

Other imortant structural factor affecting fertility rate is the structure within which the population functions. If the economy is of the household unit type where the family itself is the exclusive unit of production, the compulsion to have a large number of children is very

¹ John. D. Kasards, 'Economic structure and fertility, A comparative analysis, 'Demography Vol VIII, Population Association of America, Washington, 1971, PP 197--205.

strong. Since in the household units, major source of labour power is the family members, its strength as a producing unit increases with its size. Consequently, in such a household, the family size will be high. As the economy of the country moves from house unit type to the modern commercial industrialised type that characterises present urban areas of the developed societies, the house hold becomes unimportant as a producing unit and the economic significance of children declines appreciably. Moreover, in the urban-industrialised environment, where compulsory education is required and minimum age laws are enforced, a large number of children becomes economic liability for the family, as a result fertility will be lowered.

Demography of Nepal:

Nepal a small Himalayan country, whose population was recorded as 5.66 millions in 1911, achieved the population of 11.55 millions in 1971 (almost double during the period of 60 years). The present growth rate of the country as revealed by Mid-term census taken in 1976 is as high as 2.5%. The growth rate, if correct, eventually puts the country in highly population explosive state, with 2.5% growth rate, the population of Nepal is likely to double every 28.1 years and by 1981, the present population of the country is expected to swell to 14.83 millions.

But increment in population size and rise in population growth rate themselves do not explain the ultimate population phenomenon of the country. To explain the population phenomenon, all relevant population characteristics of the country must be explored. The exploration of the population characteristics leads to estimation of vital statistics constituting 'the demographic study' of the country.

But unfortunately, Nepal has not a long history of demographic studies, though the practice of counting people, those above and below 16 years old for military purposes is known to have existed in Nepal since ancient time. It was, however, the census of 1911, which provided the first recorded sex-wise and age-wise population distribution for Nepal, that can be used effectively to explore the demographic evolution in the country.

Prior to 1952, however, the subject 'Demography' as known today as a discipline of all aspects of population dynamics, was not known in Nepal. The estimation of population size along with a very few other limited coverage, which are now considered as a very small part of demographic studies, were the only subject matters of the censuses taken in Nepal on the average of every ten years-interval in those days.

The first modern census of Nepal was taken in 1952/54. The census coverages were greatly improved in the subsequent censuses taken in 1961 and 1971. The reports of these censuses provided vast data for demographic studies about Nepal.

The demographic evolution and features of Nepal so far observed and estimated may be viewed in the following aspects:

1. Population studies in Nepal.
2. Existing estimates of vital statistics of Nepal and their limitations.

Population studies in Nepal:

Census reports of 1952/54 are the first available population studies about Nepal.²

Sex-wise and age-wise population figures from 1911 to 1954, and many basic information as regards to population structure of the country were supplied by these studies.

On the basis of these reports, attempts were made by different agencies and persons to estimate the vital statistics for Nepal and these attempts provided the first phase of demographic studies of the country.

It was however the United Nations Bulletin³ which provided some crude estimate of important vital statistics such CBR, CDR, 'r' etc. for Nepal. The population study was extended by H. N. Thakur by projecting the population size for Nepal from 1955 to 1975.⁴ The second modern census of Nepal taken in 1961 attempted to collect information about births and deaths, for the first time in the history of Nepal. Based upon the findings of this census M. P. Upadhyaya projected the population of Nepal for the period 1961-1981.⁵

The methodology adopted in these projections were based on the Back-survival technique. Expectation of life at birth IMR's which are necessary factors for these projections were assumed to generate the basic data. Thakur, for instance assumed the expectation of life at birth in Nepal during 1954 as 25 years⁶. His projections provided the maximum and

² Government of Nepal, Department of Statistics, 'Nepal ko Jana-ganana, in Nepali (Census reports of 1952/54 Nepal) Part I, Vol I, II, III pp 1-267; Part II Vol I & II pp 1-83, Government Publication, Kathmandu, 1950.

³ U. N. 'The population of Asia and Far-east, 1950-1980' (Department of economic and social Affairs, New York, 1959).

⁴ H. N. Thakur, 'population projection for Nepal, 1955-1975: CBS, publication, Kath, 1963.

⁵ M. P. Upadhyaya, 'The population projection for Nepal 1961-1981' CBS publication, 1968.

minimum estimates for CBR, CDR, 'r', e^0 and IMR's of Nepal at various time periods between 1955 and 1975. Moreover, the estimated values were compared with the corresponding estimates made by the U. N. for Nepal. Indeed Thakur's work may be considered as the first significant work on demography of Nepal. Upadhyaya's population projection provided the sex-wise and age-wise population figures for different time periods. Estimates of other vital statistics were not found in his work. He assumed the expectation of life at birth as 37.5 years for the period 1955-1961 and 35.0 years for the period 1951-1956.⁷

On the basis of the data collected in 1961 census, Ram Chandran adjusted the basic demographic statistics for Nepal⁸. Similarly K. J. Krotki and H. N. Thakur in their paper estimated the population size and the growth rate of population for Nepal from 1954 to 1961. The third modern census conducted in 1971 along with the findings of the previous censuses provided some basic data for the exploration of population dynamics of Nepal.

Using the inter-census growth rate recorded between 1961 and 1971 censuses and graphically adjusting the age-distribution of the population, Ghuvaju, estimated the sex-wise life tables of Nepal for the period 1961-1971. His method of estimation is similar to those applied by G. E. Immerwahr and U. P. Sinha to study mortality rates for India.¹⁰

In 1975, Tuladhar, Gubhaju and Stoekel in their joint paper attempted to measure the various measures of population parameters of Nepal for the period 1961-1971.¹¹ The basic data used by them were the census data of 1961 and 1971 and those of the sample surveys conducted by the Ministry of health, NFP/MCCP, HMG for selected districts (two districts in Hills and two districts in the Terai regions).

6 op. cit. 9 p 7.

7 op. cit. 10 p 2.

8 K. V. Ramchandran, 'An evaluation and adjustment of the basic demographic statistics of Burma, Ceylon, Nepal and India' (Demographic Training and Research Centre, Bombay, 1969) pp 45-62.

9 K. J. Krotki and H. N. Thakur, 'Estimation of population size and growth rate from 1952-54 and 1961 censuses of kingdom of Nepal (Population studies, Bombay, 1971 Vol 25 No 1) p 87.

10 G. E. Immerwahr and U. P. Sinha, 'Mortality rates for India, 1951-81 (International Institute of Population Studies, Bombay, 1970) pp 5-7.)

11 J. M. Tuladhar, B. B. Ghuvaju and John Stoekel 'Population of Nepal, a structural change,' Unpublished, NEP/MCCP, Kath. 1975, pp 1-50.

One of the recent systematic study about Nepal's Demography is that made by Bourili.¹²

The estimates of vital statistics for Nepal in the above mentioned population studies are mainly based on observed census population growth rate and data borrowed from U. N's model life tables.

Since census data involve lot of errors, notable of which are omissions of the respondents, misinformation provided by the respondents majority of them being illiterate(80%); do not provide exhaustive picture of any aspect of country's demography and consumes lot money and time for the reports to be prepared on the basis of these data, it was felt that sample surveys will provide Nepal's needs of obtaining quick and efficient estimates of a particular aspect of interest in Demographic analysis of the country. Demographic Sample Survey (1974-75) and Nepal Fertility Survey, 1977 (NFS) were some of the important sample surveys conducted in Nepal.

It is thus pointed out that population studies in Nepal has been accelerating since its inception in 1911 from mere counting of population to estimation of modern sophisticated demographic measures such as Fertility rates, Mortality rates, Life expectancies, Age structure and 'intrinsic growth rates' etc. More and more scientific methodologies have been applied in the demographic evaluation of Nepal.

However, in spite of developmental tendencies in Nepal to explore the population dynamics, it is to be noted, unfortunately, that all available literature on population of Nepal are limited to the periods 1954 to 1976; and the studies made in these literatures are of pure empirical nature, therefore, not exhaustive to inform entire demographic phenomenon of the country.

Existing Vital Statistics of Nepal:

In the section, the findings of the censuses (unadjusted) the estimates of the various vital statistics in Nepal made by different persons and the findings of the NFS, 1976, are critically examined.

12 A. K. Bourini, 'The Analysis of Population Statistics of Nepal' (CBS publication, Kath, 1977).

Censuses in Nepal:

There are evidences that the censuses were conducted in Nepal long before the reign of Jung Bahadur, the first Rana prime-minister (1846-1877). However the first count for which data is available was made in 1911.¹³ Since then the censuses have been taken in Nepal for every ten years on an average.

(a) Earlier Census (1911-1941)

Till 1951, Nepal was ruled by the Ranas who believed in the isolation of the country from foreign influences. The development projects introduced in the country at present were unknown in those days. Therefore the coverage of the censuses conducted in those days was very much limited. The main objective of the census conducted then was to obtain information about the number of people for taxation and military purposes. Social characteristics and economic characteristics which are the integral part of the modern census were unheard of. The items in the census slips, however, show the eagerness of the then government to collect each and every bit of valuable information.

The information collected in the censuses before 1951 were mostly concentrated to the following sub-heads:

- (i) Name of the head of the family,
- (ii) Types of the houses,
- (iii) Classification of persons according to caste, age, sex,
- (iv) Number of persons classified according to age groups—below 16 years, between 16 to 50 years, and above,
- (v) Valids and invalids,
- (vi) Literacy percentage,
- (vii) Distribution of population in agriculture, business and civil service sectors and
- (viii) Number of domesticated animals etc.

The Nepalese government directed that the census be taken in eastern Nepal in 1952 and in western Nepal in 1953. The census was actually conducted in eastern Nepal in 1953.

13, T. B. Raymajhi 'The convention of census taking in Nepal (In Nepali) op. cit 7, part II Vol 1 p. 9

and in western Nepal in 1954. The census schedules were framed out according to St. Peteresburgh Conference's recommendation. 14 In fact, this census was the first modern census taken in Nepal. The major defects of the census was, however, the enumeration of the population at two different time periods.

The second modern census was taken in 1961. Births and deaths were recorded in Nepal for the first time in this census. An attempt was also made to verify the nicety of the census data by sampling (1% sample).

The third modern census was made in 1971. In this census, the census schedules were designed entirely on the basis of the recommendation of the Statistics office of the United Nations. 15 For the first time in Nepal, LBM 1401 was used to analyse the census data.

Limitations of Nepal's Censuses

Some of the major limitations of censuses taken in Nepal are as follows:

1. Lack of inter-census continuity:

One of the difficulties in handling Nepalese censuses is the lack of inter-census continuity. In Nepal, census schedules, areas of census districts, concept of important population terminology such as household, etc. are found to have been changed from census to census. Therefore, effective comparison in the population parameters at different time periods are very difficult to make. Continuity is very important for as Walker F. Willox (1944) points out. 16

"A Sensus should explain what errors may lurk in the figures, estimates: if possible their trustworthiness and suggest such inference as might be of more than local importance and would be accepted as trustworthy by competent students. Each successive report as each observation of an eclipse should confirm or correct the interpretation put on previous reports and suggests questions which only further report can answer."

14. B. N. Asthana and S. S. Srivastava, 'Applied Statistics of India' (Chaitanya Publishing House, Allahabad, 3rd edit., 1965) p. 65

15. Bernard Benjamin, 'Demographic Analysis' (George Allen Unwin Ltd. London, 1973) pp 5-7.

16. Walker. F. Cox, 'Studies in American demography, (Cornel University press, New York, 1944) p 4.

2. Mis-statement of the ages and Unreliability of the Respondents:

Most of the Nepalese live in the villages are illiterate. So mistakes are likely to be committed by them while providing information to the enumerators. In Nepal, information about age are mostly liable to error for most of the villagers do not remember the date of their births. Besides, woman generally prefer to lower their age hoping to look young. Also due to the fear that if they responded correctly the questionnaire presented in the census, they would be taxed for what they have declared in the census, the respondents are reported to give wrong information.

TABLE 4

(Census Dates and Census Years Figure for Nepal 1941-1971)

	Consus Order	Census Year	Census Date	Inter-census periods in years.
	EhGLISH	Nepali	Nepali Date	
1.	1911	1968	15th Jestha	—
2.	1920	1977	15th Bhadra	9.25 yrs.
3.	1930	1987	15th Mangsir	10.25 yrs.
4.	1941	1998	15th Falgun	11.25 yrs.
5.	1952	2009	15th Jestha	
	East Nepal			
	1954	2011	15th Jestha	12.25 yrs.
	West Nepal			
6.	1961	2018	8th Ashad	7.06 yrs.
7.	1971	2028	8th Ashad	10.00 yrs.

3. Variation in the Census Periods:

Except for the last two censuses, it is found that census data in Nepal was not constant. In fact, it is found that from 1911 to 1954, the census periods in Nepal followed arithmetic progression with a common difference of one year. Therefore, an effective comparison of the census figures is not possible. In most of Nepal's population documents, the comparison of the population growth are made by the population growth rates estimated by considering the population figures recorded in the censuses as the population figures of the corresponding calendar years (ignoring the differences in the census dates). Mathematically speaking, these comparisons are subject to errors due to the differences in the census dates. The different census dates and census years of Nepal are given above (Tab. 4.).

Census Population Figures:

The first census in Nepal for which data is available was conducted in 1911. The population of the country recorded during that time was 5.66 millions. The two successive censuses conducted during 1920 and 1930 found the population in Nepal declining from 5.57 millions in 1920 to 5.53 millions in 1930. The decline of the population was attributed to the following factors.¹⁷

- (a) Under enumeration of the population in the censuses of 1920 and 1930,
- (b) Deaths of Gorkha Soldiers in the First Great War 1914 and
- (c) Deaths of people by world-wide influenza epidemic during those periods.

The growth trend of population in Nepal was first recorded in the census of 1940 when the population of Nepal was found to have increased to 6.28 millions. The population increased to 9.413 millions in 1961 census and 11.55 millions in 1971. It is thus clear that the population of the country which declined during 1911 to 1930, almost doubled within sixty years from 1911 to 1971. the population figures recorded at different census periods are given below.

¹⁷, op. cit-7 P 169.

TABLE 5

(Census Population figures of Nepal, 1911-1971)

Census Year	Total population in Thousands
1911	5,658.7
1920	5,573.8
1930	5,532.6
1941	6,283.6
1952 (East Nepal)	
1954 (West Nepal)	8,256.6
1961	9,413.0
1971	11,555.9

Source: Census reports of 1952/54, 1961 and 1971, CBS, Kathmandu.

Sex Ratios Reported in the Censuses:

From the reported male and female population figures for Nepal at different censuses conducted, it is found that the sex ratios of the population for the periods from 1911 to 1971 except for the period 1961 and 1952/54, were greater than unity i. e. there were more males than females in Nepal for all censuses except 1952/54 and 1961. The estimated sex ratios of the population at different periods are given below:

TABLE 6

(Census Sex Ratio Population, 1911-1971)

Census	Sex Ratio = (Male/Female x 100)
1911	100.38
1920	100.86
1930	100.47
1941	104.22
1952/54	96.78
1961	97.06
1971	101.37

Source: Census Reports of 1952/54, 1961 and 1971.

Since the birth statistics of the country are not available for the periods prior to 1961, the sex ratio at birth is available only for the periods 1961 and 1971. According to the census data of 1971, the sex ratio at birth in Nepal is found to be 104.24 male births over 100 female births. The ratio found is nearer to the assumption made for sex ratio of the country for population projection of Nepal.¹⁸ On the other hand, Bourini used 106 male births over 100 female births (the ratio internationally accepted) for estimating the number of male and female births in Nepal during 1961-1971.¹⁹

Population Growth Rates:

One of the most frequently used population growth measures of the country is the observed census population growth rate. The census growth rates estimated from the population size, reported in the different census as, are given below:

Table 7

(Census Growth Rates)

Inter-census period	Growth in the inter-census periods	Simple growth rate per annum	Exponential growth rate per annum
1911-1920	-0.1509%	-0.124%	-0.193%
1920-1930	-0.7391%	-0.1244%	-0.074%
1930-1941	13.5740%	1.2064%	1.131%
1941-1952/54	31.39961%	2.5631%	2.260%
1952/54-1961	14.0057%	1.9838%	1.850%
1961-1971	22.7653%	2.2765%	2.050%

18. Upadhyaya, op. 1) cit 10 p 2

19. Bourini, op. cit 17 P 94

It is clear from Table 7 that the growth rate of the country which was virtually nil during 1911 to 1930 started to increase only after 1930. For 1930-1941, the census growth rate of the country was reported as 1.13%. It further increased to 2.03% during 1961-1971.

As supplementary estimates of census growth rates, different persons and agencies have estimated the population growth rate of the country by using different methods. Thakur in his paper on population projection for Nepal during 1955-1975 had estimated the maximum and minimum growth rates for different time periods.²⁰ His estimates varied from 1.14% for 1955-1960 to 2.4% for 1970-1975. On the other hand, Bourini's estimates varied from 1.50% for 1961 to 1.80% for 1971.²¹ Other estimates of population growth rate for Nepal was that made by Gubhaju. He estimated the growth rate of the country as 2.0% during 1952/54-1961.²² The estimates of growth rates for Nepal made by different agencies are given below:

Table 8

(Estimates of Growth Rates)

Agencies	Estimated Growth Rate
1. Nepal Health Survey 1965-1966	2.50%
2. CBS, based on 1961 census	1.78%
3. CBS, based on 1971 census	2.01%
4. A.K. Bourini, based on 1961 census	1.50%
5. A.K. Bourini, based on 1971 census	1.80%
6. B. B. Gubhaju, based on 1952/54 & 1961 censuses	2.00%
7. Demographic Sample Survey, 1974-1975	2.52%

The recent estimate of population growth rate for Nepal is that found by Mid-Term census conducted in 1976 which reported the growth as high as 2.5%. However, no serious work to check the compatibility of the reported growth rate with other demographic measures of the country are available at present, in Nepal.

20. Thakur, op. cit 9 p 26

21. Bourini, op. 1 cit 17 p 94

22. B. B. Gubhaju, 'An abridged life table, 1961-1971 for Nepal' (Research planning and Evaluation Division, NFP/MCCH project, Kathmandu, 1974) pp 1-7.

Age Structure of the Population:

The age distribution of population in Nepal as revealed by the censuses of 1952/54, 1961 and 1971 is found to be invariant as shown below:

Table 9**(Age Distribution of the Population)**

Age Group	Censuses		
	1952/54	1961	1971
0-4	13.12	14.18	14.68
5-9	13.12	13.98	14.68
10-14	10.46	10.39	10.36
15-19	9.38	8.37	8.71
20-24	9.26	8.85	8.78
25-29	9.04	8.94	8.26
30-34	7.53	7.77	7.42
35-39	6.00	6.00	6.25
40-44	5.56	5.22	5.36
45-49	4.08	4.00	3.76
50-54	3.84	3.88	3.42
55-59	2.37	2.37	2.17
60-64	2.58	2.69	2.71
65-69	1.11	1.16	1.24
70-74 & above	1.75	1.74	1.93
Unknown	0.57	0.46	0.00
All ages	100.00	100.00	100.00

Source: HMG, CBS; Census reports of 1952/54, 1961 and 1971, Nepal.

This is the property of so called quasi-stable population. In such a population, the fertility rate falls very slowly whereas the mortality rate falls rapidly. As a consequence, the growth rate rises rapidly.

Though the age structure of population revealed by the censuses is found to be invariant, age reporting in Nepal is highly misinformed. For instance, logically, on a population with positive growth trend the proportion of population at any time period in lower age group should be higher than in higher age groups. Accordingly, the proportion of population in the age group (0-4) ought to be higher than the proportion in the age group (5-9) years. But the census age distribution of Nepal revealed the reverse by reporting 13.9% of population in the age group (0-4) and 14.4% of the population in the age group (5-9) on an average as shown in Table 9. To account for the above noncoordination, three possibilities may be inferred i. e. either:

- (i) Children under 5 years have migrated abroad,
- (ii) The children in the age group (5-9) is not correctly reported or
- (iii) The proportion of children in the age group (0-4) is highly under-enumerated.

As regards to the first possibility, it can be said definitely that children under 5 years are not at all likely to migrate. Therefore, the first possibility is dismissed. As for the second possibility, the experiences of other nations show that the proportion of children in the age group (5-9) is most accurately reported in any census.²³ So the second possibility mentioned above is also dismissed. The only remaining possibility is therefore, the third i. e. the proportion of the children in the age group (0-4) is highly under-enumerated in Nepal. In fact, Thakur suspects the proportion of under-enumeration in the age group 0-1 as high as 45%.²⁴

Fertility Schedules:

The fertility rates of the country, at present, available are those which are mainly based on fertility data recorded during 1961 and 1971 censuses, Demographic Sample Survey,

23. Ta Ngoc Chau, 'The demographic Aspect of education planning' (Unesco, Institute for Education Planning, United Nations, Netherland, 1963) p 23,

24. Thakur, op. cit 9 p 7.

1974 and Nepal Fertility Survey, 1976. The fertility rates of the country available for the periods prior to 1961 are, therefore, all assumed values. Some of the fertility estimates available for Nepal are as follows:

- (1) **CBR:** The first estimate of CBR was that made on the basis of reported births in 1961 census. The CBR was 33.4 per thousand.²⁵ The sample survey conducted in the country later on however showed the CBR of Nepal to be higher than the above estimate. The Demographic Sample Survey, 1974 and NFS, 1976 reported the birth rate of Nepal as high as 44.7 per thousand and 43.1 per thousand respectively. Different persons are also known to have estimated the CBR of the country for different time periods by using Life Table techniques. Their estimates varied from 40.00 per thousand in 1961 to 44.7 per thousand in 1974-75 as shown in Table 10 below:

Table 10

(Estimates of CBR for Nepal, 1961-75)

Agency	Estimated CBR
1. Nepal Health Survey, 1965-66	52.00
2. CBS, based on 1961 census	40.00
3. CBS, based on 1971 census	42.87
4. A. K. Bourini, based on 1961 census	44.87
5. A. K. Bourini, based on 1971 census	40.00
6. B. B. Gubhaju, based on the 1952/54 & 1961 censuses	42.00
7. Demographic Sample Survey, 1974-75	44.70
8. Nepal Fertility Survey, 1976	43.10

In specific studies of fertility rate for particular places of Nepal, Kharel found the CBR of Lalitpur as low as 29.37 per thousand²⁶ in 1978. on the other hand, Shrestha found

25. HMG of Nepal, CBS, 'National census report of 1961 for Nepal' (HMG Publication, Kath., 1966) p 75.

26. Hem Raj Kharel, 'Population and fertility study in Lalitpur Ward No 5' (A degree level desertation submitted to Statistics Instruction Committee, Kirtipur campus, T. U., 1978) p 51.

the CBR of Kathmandu as 35.2 per thousand.²⁷ The above findings are quite contrary to any Normal Demographic Phenomenon. For Kathmandu which is the capital and the most urbanized centre of the country is shown to have more fertility rate than Lalitpur which is less developed and only a semi-urban area of the country. In another project work, Devkota, however, found the fertility rates which tally with normal demographic phenomenon. The CBR's for Kathmandu, Lalitpur, and Bhaktapur, according to her findings, were 21.0, 28.2 and 34.1 per thousand respectively.²⁸

Though the estimates of Devkota are very low as compared to national CBR estimates, her findings show that Kathmandu which is an urban area has lesser fertility than Lalitpur which a semi-urban area, and Bhaktapur, which a rural area, has a higher fertility rate than Lalitpur.

TFR'S and GRR'S:

At present, two sets of TFR's and GRR's for Nepal are available. The first set consists of the estimates based upon census data and the second set consists of the estimates based upon the sample data. The unadjusted fertility data collected in 1971 census shows the TFR and GRR of the country as 3.12 and 1.52 respectively. These estimates are extremely low as compared to the estimates based on sample surveys. In fact NFS, 1976, revealed the TFR of the country to be as high as 6.8.²⁹

Adjusting the census data, Bourini estimated the TFR for Nepal as 5.09 for 1961 and 6.30 for 1971.³⁰ Demographic Sample Survey, 1974-75, found the TFR of the country then as 6.3. Further, the sample surveys for selected districts found the TFR as 6.20.

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27. Mahendra Gopal Shrestha, 'A sample survey of fertility and family planning status of ward no 2I, Kathmandu Nagar Panchayat, (A degree level desertation submitted to statistics instruction committee, Kirtipur campus, T. U. 1978) p 23.
 28. Asha Devkota, 'Population composition and fertility levels at Kathmandu, Lalitpur and Bhaktapur districts- A comparative study,' (A degree level desertation submitted to Statistics Instruction committee, Kirtipur Campus, T. U., 1979) p 36.
 29. HMG, Ministry of Health, 'Nepal fertility survey, 1976, First report,' (NFP/MCCP, world fertility survey/ Nepal project, Kathmandu, 1977) p 47.
 30. Bourini, op. cit. 17 p 118

The estimates of GRR according to Bourini was 3.06.³¹ The above estimates show that TFR in Nepal varies between 5.09 and 6.8.

As regards to regional differentials of fertility rate the country, NFS, 1976, reports the TFR for Terai region as 6.6 and for Hills and Mountains as 7.0; thus it infers that fertility in Hills and Mountains is higher than in Terai. The age specific fertility rates and TFR's of the country estimated by different sources are given in Table 11. From Table 11, it is found that fertility rates of the country based on sample surveys are much higher than those based on census data.

Table 11

(TFR of Nepal, 1971-76)

Age Group	A. K. Bourini	Selected Sample		NFS, 1976		
	based on 1971 census, all woman, all Nepal	survey, 1975 Married woman Hills Terai		Hills & Tarai Mountains		All Nepal
15-19	74	112	132	126	149	136
20-24	267	343	222	315	296	306
25-29	310	311	262	316	312	314
30-34	261	287	197	276	245	261
35-39	196	251	150	233	216	226
40-44	109	155	78	106	75	93
45-49	43	-	-	36	30	33
TFR	6.30	7.3	5.2	7.0	6.6	6.8

31. Ibid.

Mean number of children:

Another important measure of fertility schedules is the mean number of children. The estimates of mean number of children in the country made from different sources are given below:

Table 12

(Estimates on Mean Number of children, Nepal, 1971-76)

Age Group	A. K. Bourini based on 1971 census		Selecte sample Survey, 1975 (Married woman)		Sources NFS, 1976 (Married Woman)		
	Urban	Rural	Hills	Terai	Hills	Terai	All Nep.
15-19	0.36	0.22	0.2	0.4	0.3	0.4	0.3
20-24	0.84	0.72	1.3	1.5	1.3	1.5	1.4
25-29	1.99	1.87	2.6	2.8	2.7	3.1	2.9
30-34	3.04	2.96	4.0	4.1	3.9	4.2	4.0
35-39	3.09	3.85	5.1	4.8	4.9	5.1	5.0
40-44	4.49	4.50	5.8	5.5	5.5	5.7	5.5
45-49	4.85	5.02	-	-	6.1	5.4	5.7
50-54	5.12	5.37	-	-	-	-	-

The mean number of children at the last age Group of the reproduction period, 45-49 of females, estimated by Bourini was 4.85 for urban Nepal and 5.02 for rural Nepal. All the sample surveys conducted so far in Nepal reported, however, higher mean number of chil-

children for Nepal than those estimated by Bourini. NFS, 1976, reported the mean number of children (MNOC) for Hills and Mountains as 6.1 and for Terai as 5.4 and for the whole Nepal as 5.7.

A careful examination of Table 12 shows that up to the age group 40-44 for females, the mean number of children reported by NFS, 1976 is higher for Terai than for Hills and Mountains.

Only after crossing the age group 40-44, the mean number of children in Hills and Mountains are found to be higher than in the Terai. It is obvious that higher the mean number of children, greater the TFR of the country. Since the expectation of life at birth is now estimated at 45 years, the continuity of reproduction by females above 45 years do not play a significant role in the population growth process of the country. It is therefore concluded that the fertility rate of Terai is not less than of the Hills and Mountains as was pointed out in NFS, 1976. Perhaps, because of this contradictory finding, the table showing the MNOC regionwise which was given in the preliminary report³² of the survey was deleted in its final report.

Besides, TFR and MNOC at the last age group of the reproduction period of females reported in NFS, 1976, do not tally with each other. This fact is an additional evidence to doubt the consistency of NFS, 1976's findings. Nevertheless the importance of NFS, 1976 cannot be discarded; for it provides other valuable information such as IMR of the country.

Mortality Schedules:

The mortality schedules so far estimated for Nepal are as follows:

(1) Life Tables :

At present, the following life tables are available in Nepal.

- (1) K. E. Vaidya Nathan and F. H. Gaige: 'Estimation of Abridged Life Tables, Corrected Sex-age Distribution, Birth and Death rates for Nepal, 1952-54.'³³
- (2) A. K. Bourini: 'Estimated Life Tables for Nepal for the periods 1953-61 and 1961-71.'³⁴

32. HMG, Ministry of health, 'Nepal Fertility Survey 1976 Preliminary report' (NFP/MCCP, Kath, table 2) p.5

33. K. E. Vaidya Nathan and F. H. Gaige, 'Estimation of abridged life tables corrected, Sex-Age distribution, Birth and death rates for Nepal, 1952/54 (Demography Vol II no 2, Bombay 1973) pp 278-290.

34. Bourini, op. cit 17 pp 97-100.

(3) B. B. Gubhaju: 'An Abridged Life Table Construction for Nepal for the periods 1961-70.'³⁵

The basic data used for the construction of above life tables is the recorded inter-census population growth rate and the graphically adjusted age distribution of the population.

Gubhaju's life table shows that the expectation of life in Nepal is higher for males than for females. The estimates of e_0 for male and female during 1961-70, according to him, were 42.9 years and 38.9 years respectively.³⁶ On the other hand, Bourini found that the e_0 for females is higher than for males in Nepal. Bourini found the expectancy of life for females as 37.4 years and for males as 35.2 years during 1953-61. For the period 1961-70 his estimate of e_0 for females and males were 39.90 years and 37.04 years respectively.³⁷ Bourini's life tables were based on U. N.'s Model life. Table's Mortality schedules, which was selected by using back-survival technique to the recorded population figures of 1952-54, 1961 and 1971 censuses in Nepal.

The contradictory estimates between Gubhaju and Bourini may be attributed to the fact that Gubhaju's life tables were constructed by using the correction factors which are applied to India's population where the life expectancy for males is higher than for females; whereas Bourini's life tables were based on M_x values of U. N. Life Tables, according to which female life expectancy is bound to be higher than male life expectancy.

The life tables discussed above cover the periods between 1951-1971. No life tables of the country for the periods prior to 1951 and for the periods after 1971 are known to have been constructed in Nepal.

35. Gubhaju, op. cit 27

36. Ibid.

37. Bourini, op. cit 17 pp 97-100.

(ii) Crude Death Rate :

For the first time in the history of Nepal, death statistics were included, in the 1961 census. According to it, the CDR of the country was reported as low as 13 per thousand.³⁸

The CDR of the country has also been estimated from different sources. Nepal Health Survey, 1965-66, reported the CDR of the country as high as 27.0 per thousand. By adjusting the reported number of census deaths, CBS estimated the CDR of the country as 22.2 per thousand in 1961 with 9.8 points higher than those estimated from unadjusted death statistics as reported above. The Demographic Sample Survey, however, recorded the CDR of the country as low as 19.5 per thousand for the period 1974-75. From the above findings, it is to be noted that the estimates of CDR are not consistent to each other. The officially accepted CDR of the country at present is 19.5 per thousand.

(iii) Infant Mortality Rate :

The IMR is one of the incomplete vital statistics of the country. Except for the finding of NFS, 1976, all available IMR's in Nepal are all assumed values. NFS, 1976, found the IMR of the country as 152 per thousand.³⁹ The reported value is still one of the highest in Asia.

Limitations of Nepal's Demography

The reviews of population studies in Nepal and available vital statistics of the country show that

- (1) Except for population figures and census population growth rates no other vital statistics of the country are available for the periods prior to 1951,
- (2) No significant work to explain the dynamics of population has so far been done in Nepal,
- (3) Except the fertility schedules estimates made from sample surveys, most of the existing vital statistics of the country are estimated by using the basic data provided by U.N.'s Model Life Tables,
- (4) Census and sample data collected in Nepal are not enough to estimate all important population parameters of the country,

38. HMG, op. cit 30 p 75.

39. HMG of Nepal, op. cit 34, p 76.

- (5) Vital statistics in Nepal based on Unadjusted sample or census data are insufficient and inconsistent.
- (6) Confidential limits for the growth rate of population in Nepal are not yet estimated,
- (7) No methodology to estimate the IMR of the country is yet developed,
- (8) No attempt is known to have been made to establish the relationship between social factors and the fertility rate of the country, and
- (9) Estimates of population parameters for Nepal for the periods beyond 1976 are not available.

Population characteristics of Nepal:

Some of the characteristics of Nepal's population, as reviewed earlier, along with findings of different population studies about Nepal may be briefed as follows:

- (1) The population of Nepal which was at a primitive demographic state with high vital rates and almost zero growth rate with expectation of life at birth around 20 to 25 years during 1911-1931 has now become Quasi-stable with birth rate coming down to 42 per thousand, death rate coming drastically to 19 per thousand, expectation of life rising upto 46 years and growth rate rising to explosive state of 2.5%.
- (2) The age structure of the population has remained virtually invariant during the period 1952-1971.
- (3) The regional growth rate of the country is highly unbalanced for around 4.158% growth was recorded in Terai region during 1961-1971 where as only 1.36% growth rate was recorded in Hills and Mountains of the country during the same period.⁴⁰
- (4) Infant mortality rate is still one of the worst in Asia. NFS, 1976 reported is as 152 per thousand.
- (5) Sex ratio of the population is around 101.37 males for every 100 females (1971 census data).
- (6) Sex ratio at birth is around 104 male births over every 100 female births (1971 census data).

40. Harkha Gurung, 'The population aspect of development' in (Population and development, CEDA publication, Kath., 1975) pp 23--42.

- (7) 93% of population are still engaged in agriculture.⁴¹
- (8) Literacy percent is very low. It was estimated as 20% during 1976.⁴²
- (9) Mean age at marriage is also very low. From the census data of Nepal, it has been estimated that Mean age at marriage for females during 1961 was only 12.63 years. During 1971, it was estimated as 14.50 years. The male mean age at marriage which was estimated as 17.01 years for 1961 was found to be 18.29 years for 1971.⁴³

Interactions between population and education :

Most of educational indicators are estimated on the basis of population parameters. Therefore any change in population structure will have direct effects on these indicators. Some of the interaction between population parameters and education are briefly discussed below :

(a) High birth rate and high death rate :

In this case population becomes stationary with very low life expectancy. In such population, the development of such factors as education will be meaningless; for the basic problem is how to survive. In absence of experienced population, all trained and experienced manpower has to be recruited from foreign countries. In fact, this situation was observed in Nepal during 1911-1952.

(b) Low birth rate and high CDR :

In this situation, the population ultimately terminates in which case there is not need of education planning at all.

(c) High birth rate and low death rate :

In this case population grows rapidly and there will be high proportion of children in the population. This will demand more schools which consequently will require more trained teachers. In this situation, educational expenditure will rise tremendously.

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- 41. HMG of Nepal, Central Bureau of Statistics, 'Statistics Pocket book' Revised edit (Jorgenesh preess PVT, Kath, 1974) p 19,
 - 42. HMG of Nepal, National Education Committee 'Classification of districts according to various levels of educational indicators' (in Nepali)Vol 2, 1976, p. 15)
 - 43. Estimates made by author on 'Population dynamics of Nepal'.

(d) Low birth rate and low death rate:

Of all the population parameters, Age structure of the population plays a very important role in education. Some of the important educational factors linked with age structure of the population are :

Age structure and school enrollments:

The age structure, as is obvious, enables to estimate the size of the school-age population. This enables to measure the school enrollment rates because these rates are often calculated by comparing the total number of children in a level of schooling with the corresponding age group at the official ages for that level of schooling. For instances, in Nepal, the NESP, 1971 specified the Primary education as the grades I, II and III and the ages limits of children to enroll at these grades as 6 to 8 year. Therefore, Primary enrollment ratio in Nepal is estimated as the ratio of students in grades I, II and III over the proportion of children in the age group 6-8 years.

The increase of children in this age group will decrease the enrollment ratio. Therefore to maintain the present ratio and to increase it, more students are to be enrolled, which, as a consequence, demands more primary schools, etc.

Age structure and teacher requirements :

Increase in students enrollments demand increase in teachers recruitments. The teachers will be recruited from the qualified population of the specified age group. Therefore the accurate knowledge of age structures of school going population and that of population qualifying to be teachers will show whether the demand for more teachers could be met or not.

Age structure and educational expenditures :

Expenditures on education are proportionate to enrollment and consequently, as have been pointed earlier, depend indirectly on the school age population. If the school age population is made up of children from 6 to 15 years and the economically active population is recruited from the persons aged 16 to 60 years, an estimate of the relative load of educational expenditures on the active population is obtained by establishing the proportion of 6 to 15

years-old population to those 16 to 60 years. From the above definition of educational expenditure, it is obvious that higher the proportion of children in the age group 6 to 15 years, more the educational expenditure of the country.

Besides general interactions between education and population as discussed above, the regional distribution of the population is also important. Migration rate also plays an important role in educational development of the country. The different growth rates of the population observed at different geographical regions of the country will demand regional planning in education. Further, the mass migration of population from rural areas to urban areas also create problems. The existing schools and other educational institutes in rural area will lack students and trained teachers due to drainage of affluent population of the area. The cost of running schools will increase in such areas. On the other hand, in Urban areas, more schools and educational facilities will be needed to cope up with demands created by natural growth of the population and those created by migrant population. In such situation, there will be undesirable unbalanced growth of education in the country. Urban areas will continue to grow in educational sector whereas the education in rural areas, where education is most needed for upliftment of living standard, will remain stationary or even deteriorate.

The accelerated growth of population creates other complicated problems too. For instance, though the absolute figures of literates might have increased considerably in the country, the literacy percent which is expressed as percent of literates among total population, may remain or decline, due to rapid rise in population. In such situation, it will be very difficult for the government to uplift the educational indicator of the country.

Population structure and its effects on educational planning in Nepal :

The basic concept of planning is to plan for the betterment of the population. Therefore, the development indicators targeted in the plans are usually expressed as the indices based on the population structure - according to certain pre-defined criteria.

The first systematic educational planning, National Education System Plan, 1971-1976 was introduced in Nepal with following broad objectives.

- (a) The primary enrollment ratio will be raised to 64% by the end of plan period.
- (b) The higher education will be fixed on the basis of working targets of the various insti-

tutes and the manpower needs of various economic development programmes. The existing campuses will be strengthened, up-graded and new campuses will be opened on the basis of the needs of various levels of technical manpower.

- (c) Model schools, one each in every district of Nepal will be established during the plan period.

For achieving the above targets, it was estimated that the primary school going population which was estimated as 862,510 during 1971 will increase by 13,551 every year and will attain the size of 916,714 by the end of 1975. The above estimates is based on the assumption that Nepal's population size will grow linearly, which is however not true, for population grows exponentially for a short span of time period. Had it been assumed that the Nepal's population grows exponentially with rate 'r' equal to 2.07%, the expected primary school going population by the end of 1975 will be 956,566 which is 3,9852 more than estimated in the plan's document. Accordingly, even if the expected enrollments of 591,815 primary students by 1975 targeted in the plan is assumed to be true, the enrollment ratio will be only 61.8%.

The above illustration is given to show how change in population structure affects the targets to be achieved in educational planning in Nepal.

Effects of education on population factors:

In previous sections, it has been pointed out how population factors affect the development of education in a country. Like-wise, it is a subject of interest to study the effects of education on population structure of the country. Numerous studies in other countries have found that fertility rate of the country is directly associated with the education level of the country. Higher the proportion of educated mass in the country, less the fertility rate of the country.

Other consequences of education on population structure are :

- (i) Lowering of death rate particularly IMR,
- (ii) Rising of expectation of life at birth.

However one serious bad consequence of education is development of trend among educated persons to migrate from rural area to urban areas.

Conclusion :

Throughout this paper, it has been attempted to show the effects of population factors on educational planning. Therefore, it is stressed that before implementing educational plans, accurate data about the population structure be made available. In countries where statistics are reliable, population data are often presented with all necessary accuracy and precision. But in developing countries such as Nepal, reliable population data are not often available. Therefore a great care must be taken in using them while making targets of achievement in educational planning. No planning is possible without constant reference to the present and future demographic profile of the country. Therefore, it is suggested that before implementing National plans such as National Educational System Plan, the authentic population phenomenon of Nepal which illustrates past, present and future population profile be specified.