CHAPTER 30

FERTILITY IN YEMAN:
AN ANALYSIS OF PROXIMATE
DETERMINANTS .

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SECTION I. INTRODUCTION:

The proximate determinants of Fertility are the biological and behavioural factors through which social, economic and environmental variables affect fertility. As Davis and Black (1956) pointed out, cultural, social and economic setting impinge on fertility only indirectly through the "intermediate fertility variables, that is through a series of biological and behavioural factors that determine exposure to sexual intercourse and hence to childbearing. In all known societies fertility is restricted in one way or another through these variables but the relative importance of each varies tremendously between societies. Davis and Black (1956) identified the first list of proximate determinants, but their set has not found wide acceptance in quantitative fertility studies because it is not easily incorporated into reproductive models. Bongort (1978) identified the following seven proximate determinants: Marriage (and marital disruption), Onset of permanent sterility, Post partum infecundability, Natural infecundability or Frequency of intercourse, Use and effectiveness of contraception, spontaneous intrauterine mortality and Induced bortion. The seven variables, together constitute a complete set in the sense that socio-economic and environmental factors can only affect fertility through one or more of these proximate variables. Using advance aggregate data for 41 populations (developed, developing and and historical), Bongaart suggested that the above factors are not equally important in their effect on fertility. Only four of them, namely proportion married, contraception, induced abortion and post partum infecundability are very important and explain 96% of the fertility change (Bongaart 1983).

Many governments today incorporate fertility reduction oriented population policies in their development plans as a basis for setting a time target for attaining their desired fertility reduction. A prerequisite for setting such goals for fertility reduction is an understanding of the intermediate fertility variables and their desegregated role in quantitative terms. This understanding can then be used to translate implications of fertility targets into social policy ad programmes.

This paper devotes itself to quantify the effect of the proximate determinants variables on the overall level of fertility in Yemen and to measure differntials among selected subgroups, using Bongaart Model (1978). Thus it is intended that the present Study, in addition to providing a better insight into fertility changes and giving a better explanation of the observed fertility levels in Yemen, will provide a basic for more reliable predictions of future fertility patterns and trends in the Republic of Yemen.

1.1 Country Background

The Republic of Yemen is located in the Southern part of the Arabian Peninsula. The total area, excluding Al-Rab' Al-Khali desert, is 555,000 square kilometers. The boundaries of the Republic of Yemen are the Kingdom of Saudi Arabia in the North, the Arabian Sea and Gulf of Aden in the South, the Sultanate of Oman in the East, and the Red Sea in the West. The Bab Al-Mandab Strait lies off the South- Western tip of Yemen

The latest two Censuses of the population in the Republic of Yemen were conducted in 1986 and 1988. The 1986 Census was conducted in the Northern Governorate (then called the Yemen Arab Republic: Y.A.R), while the 1988 Census was conducted in the Southern Governorate (then called the People's Democratic Republic of Yemen: P.D.R.Y.). According to these censuses, the resident population size in the Northern Governorate was about 7.8 millions and the resident population size in the Southern Governorate was about 1.8 millions. The resident population size in the Republic of Yemen was estimated at approximately 11.3 millions in 1990 (Central Statistical Organization 1991). At the national level population density is about 21.4 persons per square Kilometer, distributed among 17 governorates and the capital Mayorship (Sanaa City). The population is distributed between rural and urban areas. In 1990, 21.4% of the population lived in urban areas.

Improvement in the living and health conditions in theYemeni society following the revolution had a significant impact on population growth. The growth rate increased slightly as a result of stable birth rates coupled with decreasing death rates. In 1988,

the crude birth rate in Yemen was 52.6 per thousand, while the crude death rate was 21.8 per thousand.

Accordingly, the annual rate of population growth is 3.1%. The total fertility rate, which is the total number of live births per woman by the end of the reproductive years is 8.2 births per woman. Therefore, among developing countries, the Republic of Yemen is considered to have one of the highest rates of population growth and highest fertility rates. It is worth mentioning, that mortality in Yemen is still high, particularly among children. In 1988 infant mortality rate was 130 per thousand. Life expectancy at birth is moderate compared to many countries. In 1988 it was estimated at 46.3 years for both sexes. Education is one of the most important measures of social and economic development. Hence, the state has paid great attention to education since the Revolution in early sixties. Despite these efforts, figures show that more than half of the population is still illiterate. The 1986 and 1988 censuses in both the Northern and Southern Governorates show that illiteracy is about 67% and is higher among females than males.

Considering population activities, according to 1990 population estimates, the labour force. i.e persons aged 15-64 years - represents 44.3% of the population. Additionally, children under 15 years make up 53.5%, and 3.3% are elderly persons (65 years or more). Thus the dependency ratio in Yemen is high .126 persons in the non productive age groups for every 100 persons aged 15-64 years. Most of the Yemeni labor force (62.2 percent) is involved i agriculture and fishing, while the rest are distributed among other sectors. There are approximately 5.1 million acres of arable land in Yemen, 9.5 percent of the total land area. Only 1.1 million acres are under cultivation (Hashem et al, 1992).

Agriculture depends mainly on rain water. Eighty percent of the arable land receives raining water. Thus, production is subject to climatic conditions.

There are indication that Yemen has considerable unused mineral wealth, such as oil. The Yemeni Government pays great attention to oil exploration operations, which have increased greatly in recent years.

In 1990, the Government drafted a national population strategy which after revision, was adopted as a national policy at the National population Conference in October 1991. The National Population Council was established to oversee implementation of the policy. The objectives of the National Population Strategy for the year 2000 in the area of fertility and family planning are :

1- Reduction of total Fertility rate to 6 births per woman by the year 2000.

2- Increase the use of contraception to 35% among women of reproductive age, and expanding family planning services to men.

3- Make a family planning a free choice for couples, a basic human right, as well as a factor for social change. Family planning must also include the right to treatment of infertility (Central Statistical Organization 1992).

1.2 Overview of the Literature

The Yemen Demographic and Maternal and Child Health Survey (YDMCHS) of the 1991/92, was the first large scale attempt to measure fertility and its socio-economic and socio-cultural determinants in the Republic of Yemen, The main finding of the country report especially in the area of fertility can be summarised as follows:

The crude birth rate (CBR) in Yemen, which is centred on the year 1990, is 40 births per thousand population. It is substantially higher in rural areas (42) than in urban ares (34). The general fertility rate (GFR), estimated from the Survey data for the country as whole, is 238 birth per thousand women aged 15-49, it is also much higher in rural areas (254) than in urban areas (176). The (TFR) or total fertility rate for Yemen for the three years preceding the Survey is 7.7 births per woman, which is one of the highest total fertility rates in the world, (the total fertility rates for five Arab countries in which DHS Survey has been implemented are: Egypt 1992: 3.9 (El-Zanaty et al, 1993), Morocco 1992: 4.0 (Azelmat et al, 1993), Tunisia 1988: 4.4 (Alouid et al, 1989), Sudan 1989.90: 5.0 (Dos and IRD, 1991) and Jordan 1990: 5.9 (Zouib et al, 1992). With respect to urban - rural differentials, the total fertility rate

for urban areas (5.6) is, as expected much lower than the TFR for rural areas (8.2). The TFR for small urban areas in Jordan is the same as TFR for urban areas in Yemen. The TFR for urban women in other Arab countries range from 2.5 in the Morocco 1992 Survey (Azelmat et al., 1993) and 2.9 in the Egypt 1992 Survey (El-Zanaty et al., 1993) to 3.4 in the Tunisia 1988 Survey, (Aloui et al., 1993) and 4.1 in the Sudan 1989/90 Survey (Dos and IRD, 1991). Rural areas have higher IFR, than urban areas. The TFR for the Northern and Western Governorates (8.2 children per woman) is almost 50% higher then the TFR for the Southern and Eastern governorate (5.5). Fertility rates are related not only to the geographical area in which a woman resides but also to her level of education. Women who have received no formal education have a TFR of 8.1, 2.4 children higher than for women who have received primary education (5.7), and 4.6 children higher than for women who have received more than primary education (3.5). Concerning the mean number of children ever born (CEB) to women age 40-49, which is a measure of completed fertility i.e. the cumulative fertility of woman of reproductive age, who are approaching the end of their child bearing years, according to YMDCHs country report, for all women, the mean number of children ever born is 7.8 which is very close to TFR for the country as a whole, which indicate that the overall fertility has remained virtually unchanged in Yemen. The date shows that a slight rise in fertility occurred among women in rural areas, those residing in the Northern and Western Governorates and those who have no formal education. This is inferred form the higher TFRs, compared with CEDs.On the other hand, there is some indication that fertility may be declining in urban areas, in the Southern and Eastern Governorates, among women - who have more than primary level of education.

The YDMCHs result shows that the proportion of women over 40 who have never given birth which can be taken as a measure of primary sterility, less than 2% of currently married woman 40-49 are childless and have never given birth, compared to other countries in the region and the developing world as a whole primary infertility is very low in Yemen. In Yemen more than 4 in 10 births have birth intervals of less than 24 months and one-fourth of births occurred after an interval of less than 18 months.

A number of factors, many of which are rooted in traditional practices are considered responsible for Yemen's excessively high fertility. Marriage is nearly universal among females, reflecting that by the age of 50 almost all Yemeni women have entered into a marital union. At the time of the YDMCHs, among all women 15-49 about three in four women had married: 72% currently married, 2% widows and another 2% divorced or separated. In comparison with the five other Arab countries in North Africa and the Middle East where the DHS Survey have been implanted the proportion of women 15-19 who have ever married is highest in Yemen. The proportion of women 15-19 who have ever married: Egypt 1992. 70% (Al-Zanaty et al. 1993); Morocco 1992: 60% (Azolmet et al. 1993): Sudan 1989/90: 60% (Dos and IRD. 1991); Tunisia 1988: 60% (Aloui et al. 1989): and Jordan 1990: 56% (Zocebi et. al., 1992).

Marriage is not as stable in Yemen as it might appear from the small proportion of women who are divorced or widowed. remarriage is relatively common. However, a large proportion of women have married once only (89%), and11% of women have married more than once.

The median age and marriage in urban areas is almost the same as in rural areas. but in both areas median age at marriage differs by more than one year. Women in the Southern and Eastern Governorates marry later than women in the Northern and Western Governorates.

While there are only minor differences in age at first marriage by residence and region, educations plays an important role in determining women's entry into marriage. Improvement in education opportunities for women have resulted in their staying in school longer. thus pushing age at marriage upword. The difference in age at marriage is more than seven years between women with no formal education (median 15.7 years), and those who have attained more than primary schooling (median 22.9 years). overall difference in the median age at marriage for various background characteristics mainly due to variation in the age at marriage among younger women (i.e. under 35 years): age at marriage differs little among older women.

The risk of pregnancy, hence level of fertility, is affected by the period of insusceptibility following child birth. After child birth until a women resumes sexual activity or the rerun of menstruation, the period called post partum amenorrhoea,, a woman is not at risk of pregnancy. In the YDMCHs, information was collected on the duration of post partum amenorrhea following each birth in the last five years. However due to cultural sensitivities, the questions on the length of postpartum sexual abstinence was not asked. In Yemen as in many Arab countries, women generally practise abstinence from sexual relations during "Nifath" a period of 40 days following child birth. So in this case insusceptibility and postpartum amenorrhea use interchangeably. The YDMCHS analysis show that 26% of the mothers had not resumed menstruating and were in susceptible. The average duration of post partum amenorrhea is 9 month; the median duration of insusceptibility is 6 months. Interestingly, there estimates are similar to the results obtained in 1990/91 Pakistan DHS Survey (NIPs and IR: 1992).

The data reveals that the median duration of post partum amenorrhea for Yemeni women is one month longer for women over age 30 than those younger; and longer for women in the Northern governorates compared to the Southern and Eastern - governorates. The differences in the median duration of insusceptibility are much higher by area of residence and level of education. The median duration of post partum a menorrhea for women living in urban areas and those who have some education are much shorter probably because of shorter duration of breastfeeding.

Concerning the current use of contraceptive, the YDMCHs data show that, including prolonged breastfeeding as a method, the contraceptive prevalence rate in Yemen for all currently married women is 10%. It is 7% if breastfeeding is not included. Although the contraceptive prevalence in Yemen is low compared with many other Arab countries, it is much higher than the one percent prevalence rate reported in 1979 by the Yemen Arab Republic, which in this Report is referred to as the Northern and Western governorates and has a prevalence rate of 8%. An extremely large difference in prevalence is observed between urban and rural areas. At the time of the Survey, 28% of urban women were using a contraceptive method compared only with 6% of rural women. Rural women are also relatively more likely than

urban women to rely on prolonged breastfeeding. The prevalence rate in the southern and eastern governorate is twice of high in the Northern and Western governorates, pronounced differences in current use exist by level of education. The proportion of married women using contraception increased dramatically from 7% among illiterate women to 24% among those with Primary school completed, and then jumps to 39% per women with Post Primary Education.

1.3 Objectives of the Study

The main objectives of this study are:

- To estimate the proximate determinant of fertility in Yemen and to quantify their effect on the overall level of fertility, and measure differential among selected subgroups using Bongaart's model (1978).

- To estimate the fertility inhibiting effects of the proximate determinants of fertility.

- To estimate the contraceptive prevalence levels required to reach a fertility target.

1.4 Methodology and Analysis

The emphasis is on estimating proximate determinant and their impact on fertility levels and differential rather than an attempt to explain why they are at the observed levels. For this purpose, we have chosen to use the Bongaart's model (1978, 1982) which expresses the impact of each of the four mean intermediate fertility variables in term of the extent to which it inhibits overall fertility. We use finer subgroups by education, regions and type of place of residence. Thus education is classified into categories: "no schooling", "primary", "more than primary", "Type of place of residence" is divided into urban and rural areas and regions as North and West region versus South and East regions of the country.

Also, the model of estimating contraceptive level needed to reach a chosen fertility target will be applied.

The contribution of the main intermediate fertility variables to fertility level and differential:

SECTION II. APPLICATION OF THE BONGAART'S MODEL TO YEMEN DATA:

The fertility effects of the four most important proximate determinants:

Proportion married, contraception, induced abortion and post-partum infecundability, are measured in the model by four indexes: C_m, C_c, C_a and C_i, respectively. The indexes can only take values between 0 and 1. when there is no fertility inhibiting effect of a given intermediate fertility variable, the corresponding index equal 1, if the fertility inhibitions is complete, the index equal 0.

Bongaart's original model specified the relation between intermediate fertility variables and the fertility rates as follows:

$$TFR = TF \times C_m \times C_c \times C_i \times C_a$$

Because of the lack of reliable data, no attempt has been made here to estimate C_a. the index of induced abortion.

Our model is thus

$$TFR = TF \times C_m \times C_c \times C_i$$

with TF: defined as the total potential fertility (total fecundity), or the level of total fertility if all women were continuously married between age 15 and 50, did not breastfeed, use contraception, or have induced abortions. This level, in other words, represents the hypothetical fertility level that would exist in the absence of any reduction by the four determinants.

TFR: is the total fertility rate calculated from age-specific fertility rate of women than aged 15-49, for the three years preceding the Survey.

The three indices. Cm, Ci and Cc are estimated from the equations:

$$Cm = TFR / TMFR$$
$$Cc = 1 - 1.08 \, (u \cdot e)$$
$$Ci = 20 / (18.5 + i)$$

TMFR: is the total marital fertility rate calculated from age specific fertility rates of women both married and then aged 15-49 for the three years preceding the Survey.

u : is the proportion of married women currently using contraception.

e : is the estimated average contraceptive effectiveness (weighted average of use effectiveness of the different methods used), 1.08 is the correction factors for primary sterility.

i :is the estimated mean duration of postpartum non susceptible non exposed period (i.e the mean duration of the period during which women are on post partum amenorrhoea or post partum abstinence), 20 is a birth interval without lactation or post partum abstinence and is made up of an average gestation and exposure period of 18.5 months and post partum amenorrhea of 1.5 months).

i is estimated from duration of lactation (B) with the following equation:

$$i = 1.753 \; e^{0.139613 - 0.00187282}$$

SECTION III. RESULTS AND DISCUSSION:

The results of the application of the Bongaart's model are presented in Table (1).
The overall total fertility rate (TFR) for Yemen is about eight children per woman.
The over all index of non marriage, Cm is 0.721 indicating that total fertility is about
72% of total marital fertility as a result of non-marriage. The index of contraception,
Cc is 0.909 and implies that total marital fertility is 91% of total natural fertility due
to contraception. The index of the non exposed non-susceptible period, Ci is 0.679
again implying that total natural fertility is 68% of total fecundity as a result of
postpartum non susceptibility, basically influenced by breastfeeding. The estimated
indices yield an implied total fecundity rate of 17.3, which can be interpreted to
mean that on average a Yemeni woman who is contiguously married throughout the
reproductive age 15-49, used no contraception and no induced abortion and does not
breastfeed, has the potential to produce 17 children. Those women who live in rural
areas, and in the North/West region, and illiterate women experience the highest
fertility, slightly above the national average, while women residing in urban area, in
the South Eastern region of the country and those with seven or more years of
schooling have the level fertility with 5.6, 5.5, 3.5 children per women respectively.
It seems that women residing in urban areas, and S/E region of the country and those
with seven or more years of schooling, use contraception to limit their family size.

Table (2) presents the estimates of indices of the intermediate fertility variables by
age groups. The main fertility inhibiting variable is seen to be the post partum period
(Ci = 0 679), followed by the marriage pattern (Cm = 0.721). Contraception has only
a very minor impact (Cc = 0.909). The same basic pattern recurs in each of the
separate age groups, except that nearly all the impact of marriage pattern is seen to
be restricted to the youngest age group, indicating that delay entry into marriage has
a much greater impact than either non-marriage or marital dissolution. As is to be
expected, the impact of contraception is slightly greater for older than for younger
women, but only marginally so, while the impact of the post partum period is greater
or slightly higher among the older, more traditional women.

If we take the combined effect of C_i - the traditional fertility inhibiting mechanism - and C_c - the more modern one - and calculate their product $C_c \times C_i$, then younger women have systematically higher values (i.e less fertility inhibition) than older women: the product is 0.639 for the age group 15-24, o.617 for women age 25-34 and 0.602 for women in 35-39 age group. Clearly the younger women are not yet adopting contraception in sufficient numbers or level to counterbalance their lesser observance of prolonged lactation and abstinence.

Table (3), shows the effects of different combinations of variables at subgroup level. For all ages, we see that the combined inhibiting effects of the postpartum period and contraception (left hand panel) are smaller for women residence in rural areas than for their urban counterpart ($C_c \times C_i = 0.638$ compared with 0.532), due to high prevalence of contraceptive use among urban women. The same is true for women in N/W region compared to those residing in the S/E region. The same pattern is notice for the youngest age group. The tendency of urban women and women residence in the S/E region not to observe prolonged lactation and a menorrhea is fully or mostly compensated by their greater use of contraception. This is not true, however for youngest age groups, who do not compensate through contraception.

Urban women has the greatest combined fertility reducing impact for these two variables (0.5320). achieves this mainly through its significantly greater use of contraception, while among the age groups the oldest women (35-39) have the greatest combined fertility reducing impact for the two variables and perhaps achieves that mainly through a particularly longer post partum period. Among educated women those highly educated achieve the highest fertility inhibiting effect of the two mentioned variable perhaps mainly through higher use of contraception ($C_c \times C_i = 0.387$).

When C_m is included in addition to C_c and C_i (right hand panel of Table (3)), then the combined impact is clearly stronger for highly educated women, urban women , residence of the S/E region in a respective order, while the strongest effect is shown among the youngest age group.

The application of the Bongaart's model also implies that the difference between a total fecundity of 15.30 and total model estimate TFR of 6.78 namely 8.49 birth per women, is the result of the inhibiting effect of the proximate determinants

TFR = TF x Cm x Cc x Ci
6.8 = 15.30 x 0.721 x 0.909 x 0.679

to obtain the inhibiting effect of each determinant the total inhibiting effect of 8.49 births is Prorated by the Proportion of the logarithm of each index to sum of logarithm of all indices:

100 Log (Cx) / Log (Cm X Cc X Ci)

where x = refers to marriage, contraception or infecundability.

Table (4) indicates the relative importance of each proximate determinant considering its percentage of contribution to the differences between model estimated TFR and TFR or the magnitude of its fertility inhibiting effect given in the (parentheses).

The result indicates that, of total 8.49 births being inhibited, 3.4 births or 40% are due to the effect of non marriage. 4 births or 48% to location in fecundability and one birth or 12% for contraception.

It is evident from Table (4) that breastfeeding avert more births than either celibacy or contraceptive use. Its greater inhibiting effect on fertility is found among rural women and its minimum inhibitory effect is shown among highly educated women.

Non marriage being more important among highly educated women avert 5.4 births. and with almost equal inhibitory effect among urban women and those residing in The South East region of the country averted 5 births. In fact, contraception is a very minor fertility inhibition factor in Yemen, although its inhibiting impact is

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substantial among educated women especially those with more than primary education, followed by urban women and to lesser extent for resident of the S/E region.

The main point to emerge from this analysis is that breast feeding and consequently post partum infecundability appear to be the main constrain of potential fertility national wide in Yemen followed by non marriage or celibacy. However for urban women, the most important factor is celibacy, and postpartum amenorrhea and contraception have almost the same inhibiting impact on fertility. In the S/E region celibacy is the most inhibiting factor followed by its inhibition effect of post partum infecundability and to less extent by contraception.

Whereas for educated women the most reducing factor or fertility inhibition factor is celibacy, followed by contraception to the same level while post partum amenorrhoea have negligible effect.

SECTION IV. CONTRACEPTIVE PREVALENCE LEVEL REQUIRED TO REACH A FERTILITY TARGET:

Governments of a substantial number of developing countries make efforts to limit fertility by encouraging contraceptive use. often specific fertility goals are set for future years. For instance. among the objectives of the population policy in Yemen is to reach a fertility level of 6 births per women by the year 2000, and to raise contraceptive use to 35% among women; of reproductive age.

Administratives of family planning programmes are then faced with the question of what level of contraceptive prevalence and effectiveness to aim for in order to reach the fertility target.

The answer to this question is provided by the following equation, if the indices for the other proximate determinants are constant or compensate each other.

$$U2 \times e2 = (1 - TFR2 (1 - 1.08 \times u1 \times e1) / TFR1 / 1.08$$

The 1 and 2 refer to the present and a given year in the future. this equation demonstrates that a specific fertility goal TFR2 can be reached with a variety of combination of contraceptive prevalence and effectiveness as long as the product u2 x e2 is equal to level estimated by the mentioned equation.

If methods with low use effectiveness are expected to be used in year 2, then a higher prevalence level will be required to meet the target. On the other hand , fewer contraceptive users would be needed if a switch to more effective methods took place. This is illustrated in Table (5) which presents estimates of the contraceptive use and effectiveness levels needed to obtain TFR of 6 in Yemen in a given future Year. say for instance by the year 2000. According to this assumptions. Yemen's TFR in the year 2000 would be 6 if the proportion of contracepting women more raised to 28% with a use effectiveness of 0.90% .but on prevalence of any 26% would be needed if use effectiveness could be raised to 95 by relying strictly on more effective methods.

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However, for rural women to reach the targeted fertility level of 6 births for woman. it is needed to rise the contraceptive prevalence level to 0.59 for use effectiveness of .90 and to .56 for use effectiveness of .95, which reflect the optimistic and unrealistic stated target. The same could be said for those women who residing in N/W region while for Yemeni women in urban areas and in S/E regions and educated women they already reach the aiming fertility target, so great emphasis should be devoted to rural women and those residence in N/W region as the most highly targeted group for family planning programme in the coming years in order to achieve a reasonable percentage of the the stated goal by the year 2000.

SECTION V. SUMMARY AND RECOMMENDATIONS:

5.1 Summary

Data from a 1991/92 Yemen Demographic and Maternal and Child Health Survey of 6150 ever married woman below age 50 are applied to Bongaarts model of the proximate determinant of fertility. A total fertility rate (TFR) of 6.8 births per women is estimated from the model, compared with TFR of 7.7 actually observed from the Survey. The estimated TFR result from the assumed total fecundity (TF) of 15.30 births per women being inhibited by the index of the proximate determinants of fertility, most notably postpartum infecundability (c_i = 0.679), non-marriage (c_m = 0.721) and contraception (c_c = 0909).

The post partum greater inhibition effect on fertility is found among rural women where it contributes by 52% reduction. followed by urban women, contributed by 27% and its minimum effect is observed among highly educated women where it shares only by 14%,reduction in fertility. It seems that the result of the modernising influence of education and urbanisation has been reduction in lactation amenorrhoea. However, reduced breastfeeding has been over-compensated by increased contraceptive use among women with high education and those residents in urban areas, at the same time the impact of postpartum amenorrhoea is low among young women . the data reveal that young women are not yet adopting contraceptive in sufficient amount to counterbalance their lesser observance of prolonged . brestfeeding.

Non-marriage being more important as fertility inhibitor among women residing in the South-East region of the country (50% reduction). followed by urban women (46%). and non educated and highly educated women. shared by 47 % and 46% reduction in fertility respectively. However all the impact of marriage pattern is seen to be restricted to the youngest age group. indicating that delay entry into marriage has a much greater impact than either non-marriage or marital dissolution.

In fact contraception is very minor fertility inhibition factor in Yemen, although its inhibiting impact is substantial among educated women, specially those with more than primary education. It shared by 41% reduction in fertility. What Comes next was its inhibiting effect in urban woman fertility by 27% and to a lesser extent to those women with residence in the South East region (17 % reduction in fertility).

It becomes evident from the results of this Study that the national goal of achieving 35% prevalence of contraception and total fertility rate of ^ births per woman by the year 2000, seems to be very optimistic and unrealistic goal. The estimate of the CPR needed to obtain TFR of 6 births per woman in Yemen in the near future, shows that the proportion of women using contraception should be raised nationwide to 28% with a use effectiveness of .90 or a prevalence of 26% if use effectiveness could be raised to .95 by relying strictly on more effective methods, while in fact prevalence still less than 10% with TFR of 7.7 births per woman nationwide. Although educated women and women resident in urban areas and S/E region almost achieves the target goal of reducing fertility, however this concerns only a very small proportion of population.

Finally, as we have seen , the potential for conflicting effect on fertility of change in the various proximate determinants-sometimes with the fertility enhancing changes and sometimes with the fertility inhibiting changes dominating, sometimes with a rough balance between them is clear. There is no doubt that in order to understand and make useful projections of the course of fertility, we need to study, not only fertility ideals, but also the way in which the proximate determinants , both individually and as a set respond to social and economic pressures.

Whether the major concern of the Yemen Government, on health, education, community development, woman status, or any other population-related subject, those responsible for population policies and programmes will find a reach field in reflections on the proximate determinants of fertility.

5.2 Recommendations

In view of the findings of this Study the following recommendations seem to emerge:

1. In accordance with Yemen population policy, female education, specially up to the secondary school level, should be given the priority it deserves.

2. Formulating and implementing polices intending to rise as at first marriage. From a policy point of view, a significant increase of age at first marriage would achieve a great reduction in fertility.

3. Given the importance of prolonged breastfeeding in reducing fertility, more efforts must be devoted to encourage breastfeeding Practice, specially among young women and those resident in urban areas.

4. Great efforts are needed to make contraceptive related services available, accessable, and affordable to a large mass of the target population, specially in rural areas.

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SUBGROUP	TFR	TM	U	e	Cm	Cc	Ci	TF
Total	7.7	10.6	.097	.870	.721	.909	.679	17.3
Residence								
Urban	5.6	9.6	.282	.880	.564	.732	.727	17.9
Rural	8.2	11.2	.057	.870	.731	.946	.675	17.6
Region								
N/W	8.2	11.2	.083	.880	.734	.921	.679	17.9
S/E	5.5	9.2	.167	.870	.599	.843	.716	15.2
Education								
Illiter.	8.1	11.4	.060	.870	.770	.934	.732	16.7
Primary	5.7	7.4	.240	.880	.781	.769	.807	11.8
GT Prim.	3.5	5.8	.360	.870	.601	.634	.858	10 7

TABLE (2)

ESTIMATING OF THE INDICES OF THE INTERMEDIATE FERTILITY
VARIABLES BY AGE GROUP, YEMEN, 1991-92

Age Group	TFR	TMFR	Cm	Cc	Ci
15-19	1.93	4.63	.417	.939	.680
25-34	3.00	3.39	.885	.903	.683
35-39	1.29	1.40	.921	.889	677
45-49	7.70	10.6	.726	.909	.679

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TABLE (3)
THE COMBINED IMPACT OF THE MAIN PROXIMATE DETERMINANTS
ON FERTILITY, YEMEN, 1991-92

| SubGroup	Indices Affecting Marital Fertility $Cc \times Ci$	Indices Affecting Overall Fertility $Cm \times Cc \times Ci$
Age Group		
15-24	639	266
25-34	617	546
35-39	.602	554
Residence		
Urban	.638	.467
Rural	.532	310
Region		
N/W	.625	.459
S/E	.604	362
Education		
Illiterate	663	577
Primary	.600	.529
GT Primary	381	.331
Total	617	445

TABLE (4)
THE FERTILITY INHIBITING EFFECT OF THE THREE PPROXIMATE
DETERMINATES INDICES BY RESIDENCE, REGION, AND
EDUCATION, YEMEN, 1991-92

SubGroup	TF-TFRest.	Fertility-Inhibiting Effect and Percent Contribution		
		Cm	Cc	Ci
Total	8 49	40(3 4)	12(1 0)	48(4 1)
Residence				
Urban	10 55	46(4 9)	27(2 8)	27(2 9)
Rural	8 16	41(3 3)	7(0 6)	52(4 2)
Region				
N/W	8 28	40(3 3)	11(0.9)	50(4 1)
S/E	9 80	50(4 9)	17(1 7)	33(3 2)
Education				
Illiterate	7 2	47(3.4)	12 5(0 9)	43(3 1)
Primary	9.6	34(3 3)	37(3 5)	29(2 8)
GT Primary	11 8	46(5 4)	41(4 8)	14(1 7)

TABLE (5)

MODEL ESTIMATE OF CONTRACEPTIVE PREVALENCE AND
USE-EFFECTIVENESS REQUIRED TO REACH FERTILITY
TARGET, YEMEN, 1991-92

Future Fertility Target (TFR$_2$)	Contraceptive Use Effectiveness In the Target Year (e)	CPR Required to Reach Fertility Target
Yemen (Total)		
6.0	.85	.29
6.0	.87	.29
6.0	.90	.28
6.0	.95	.26
Urban		
6.0	.85	.60
6.0	.87	.59
6.0	.90	.57
6.0	.95	.54
Rural		
6.0	.85	.62
6.0	.87	.61
6.0	.90	.59
6.0	.95	.56

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RELATIONSHIP BETWEEN THE FERTILITY
INHIBITING EFFECTS OF THE PROXIMATE
VARIABLES, YEMEN, 1991/92
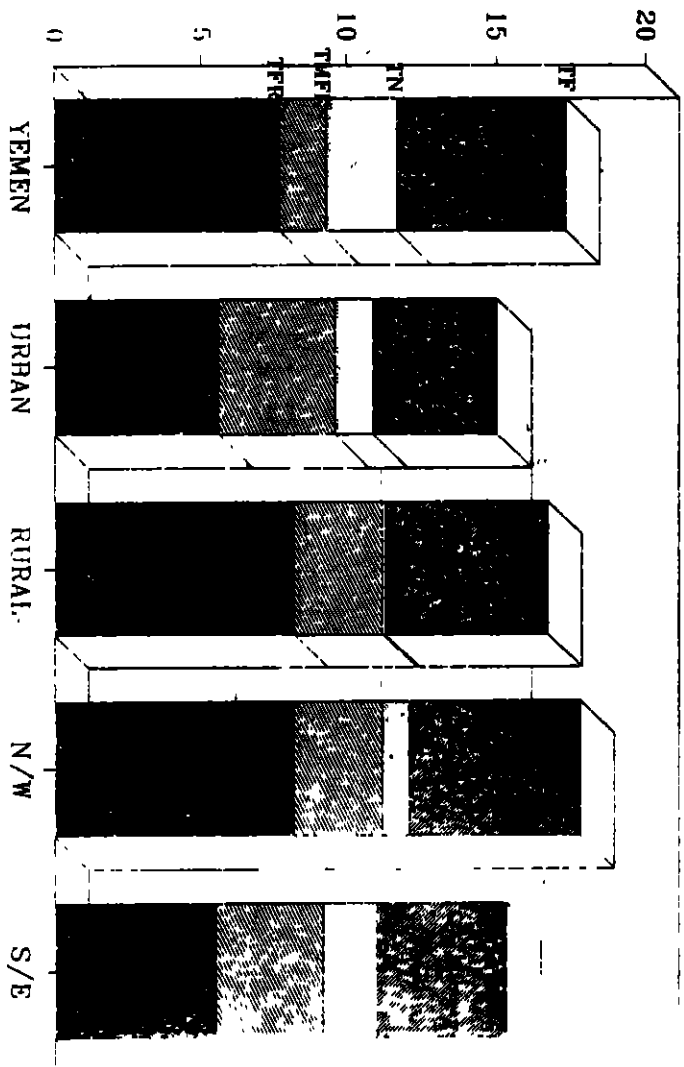
RELATIONSHIP BETWEEN THE FERTILITY
INHIBITING EFFECTS OF THE PROXIMATE
VARIABLES BY EDUCATION LEVEL