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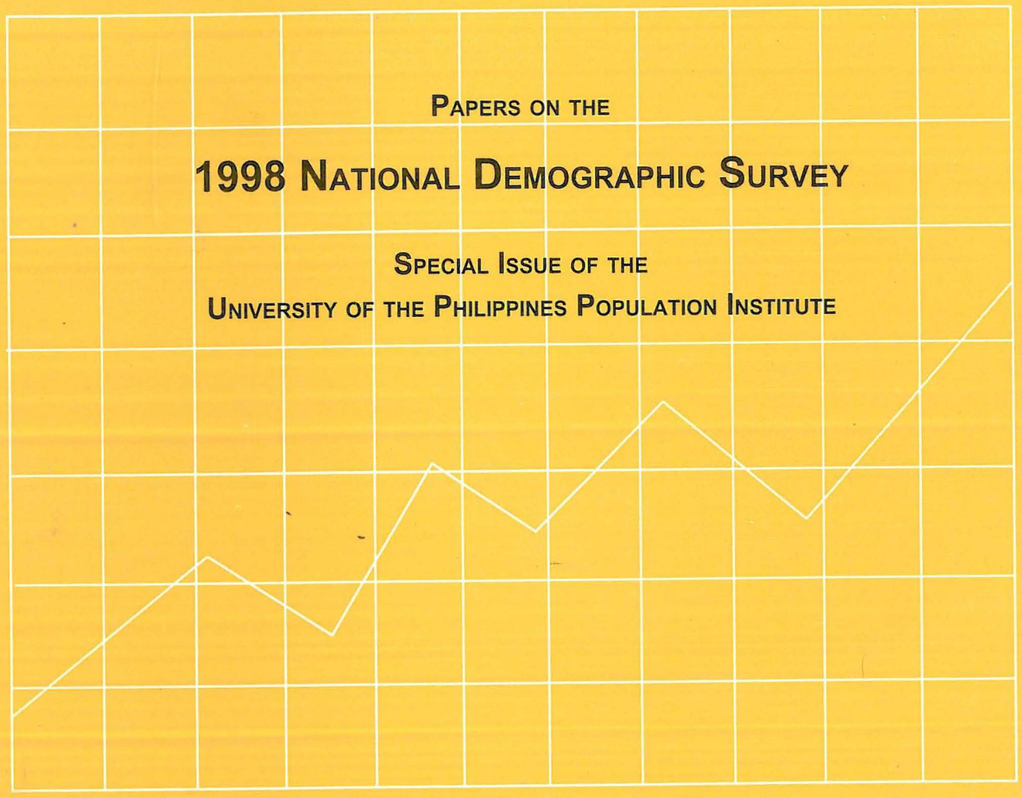

DETERMINANTS OF CHILD MORTALITY AND MORBIDITY IN THE PHILIPPINES

UTILIZATION OF MATERNAL HEALTH SERVICES IN THE PHILIPPINES

THE TIMING OF FIRST BIRTHS AMONG YOUNG ADULTS IN THE PHILIPPINES

WANTED FERTILITY AND UNMET NEED FOR FAMILY PLANNING AMONG YOUNG ADULTS IN THE PHILIPPINES

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Social Science Information

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EDITORIAL iv

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Editorial

The articles in this volume are products of the second stage analyses of the 1998 National Demographic Survey (NDS) undertaken by the National Statistics Office in collaboration with the Department of Health, the University of the Philippines Population Institute, the Behavioral Sciences Department of De La Salle University, other concerned agencies in the Philippine government and Macro International Inc. The United States Agency for International Development (USAID) funded the 1998 NDS and previous NDSs. The articles were written by researchers of the DLSU Behavioral Sciences Department and the UP Population Institute.

One of the aims of publishing these articles is to provide information to policymakers and program planners and implementors to help them make decisions about priorities for the health sector. The papers contribute to the discussion of programmatic issues which are vital to the administration and improvements of welfare, health and family planning programs in the Philippines. All deal with the quantitative dimension of understanding further some of the demographic processes and behavioral health practices, including assessments of programs.

The volume starts with the identification of factors that significantly lower child mortality and morbidity and which program managers can manipulate to improve the quality of life of Filipino children. The second article considers utilization of prenatal, delivery and postnatal services both from the client and provider perspectives and provides detailed recommendations to improve the use of maternal health services. The third article examines trends and determinants of the timing of first births among young adults. The last article continues with the analysis focused on young female adults but concentrates on the determinants of unplanned fertility and unmet need for family planning. It is hoped that the present volume will increase more scholarly attention to programmatic issues that call for an answer, no matter how difficult.

I wish to thank the USAID and Macro International Inc. for providing the funds in undertaking the studies. I am also very grateful to Dr. Andrew Kantner for his inputs starting from the securing of necessary funds to his continuous guidance and technical expertise during the analyses and his insightful comments in the preparation of these papers. I also wish to thank the Philippine Social Science Council for copy editing and handling of the manuscripts and taking the burden in publishing them. My heartfelt thanks to the authors at the DLSU Behavioral Sciences Department and UP Population Institute for their sacrifices and perseverance in coming out with meaningful and useful research outputs for both program managers and academicians.

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DETERMINANTS OF CHILD MORTALITY AND MORBIDITY IN THE PHILIPPINES

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EXECUTIVE SUMMARY

Infant/Child Mortality

This study sought to determine the effects of selected socioeconomic and proximate determinants on infant and child mortality within the period from 1993-1998. Maternal educational attainment emerges as the strongest socioeconomic determinant during early and late childhood mortality. Negative effects of urban residence and household wealth on under-five mortality are evident. However, mothers who are working appear to face much higher infant mortality risks. This finding suggests that the lengthening of maternity and paternity leaves from four months to a much more reasonable period (say 12 months) could be a useful approach for further reducing the rate of infant mortality.

Infants having the shortest preceding birth interval of 9-19 months do not have higher risks of death compared to infants with the longest preceding birth interval of 40 or more months. The age of the mother at the time of delivery exerts a positive influence on child mortality, while no significant effect was noted for the birth order and gender of the child. The significant effect noted for age of the mother underscores the importance of family planning as a child survival intervention.

The effects of supplementation and longer durations of breastfeeding are observed in reducing child mortality in general. Simple policy measures to stimulate longer breastfeeding and more widespread introduction of early food supplementation may therefore contribute to further reductions in child mortality.

Mothers who receive tetanus toxoid during pregnancy and who receive prenatal care experience reduced under-five mortality. Women who seek assistance during delivery experience lower risks of child death while women who deliver at home experience greater risks of under-five mortality compared to women who deliver in private facilities. It is also important to note that mothers who have visited a heath facility during the last 12 months experience lower risks of having an infant die. Since residence in an LPP (Local Performance Program) area is also found to be effective in significantly reducing child mortality, more intensive program efforts may promote further declines in infant and child mortality. These findings highlight the importance of medical and preventive care during pregnancy and delivery.

While the positive effect of a safe water supply is observed for under-five mortality, the source of drinking water is not a crucial factor for infant mortality. The high level of breastfeeding within the first 12 months of life may be responsible for the weak effect of water source on infant mortality.

Several policy implications and insights can be derived from the findings in this study. With maternal education noted to be the most important socioeconomic determinant of child mortality, policy efforts to upgrade the formal educational attainment of women to at least secondary education may significantly reduce early and late childhood mortality. Directing short-term educational programs toward women, including child caretakers, can also be incorporated within health programs in areas or communities where these

programs are underway. This is also one way to inform women about health care, family planning, proper supplementation, and breastfeeding.

Making improvements in delivery practices (such as increasing the proportion of deliveries in hospitals/dispensaries and enhancing provider competency, especially among traditional birth attendants) and increasing tetanus toxoid coverage are important policy options for reducing infant and child mortality. Moreover, improving the availability of health facilities in rural areas will likely improve health facility utilization, including the use of prenatal, delivery, and postpartum services.

Infant/Child Morbidity

Children in Visayas and Mindanao are less likely to contract ARI compared to children in Metro Manila. This does not come as a surprise but rather as confirmation of the deteriorating air quality in Metro Manila. Once a child falls ill with ARI, the region where the child lives is not a significant factor affecting ARI treatment, implying that care is not compromised if he/she comes from a less developed region. However, for vitamin and mineral supplementation, results show that some regions outside Metro Manila are less likely to receive vitamin A, iron, iodine supplementation and immunization for BCG. This result, which does indicate that some regions are not as likely to benefit from specific health interventions, raises questions about the efficiency of service coverage outside Manila.

Findings also show that visiting a health facility in the last twelve months is a significant factor affecting a mother's choice to have her child treated for ARI, obtain immunization, and be given nutritional supplementation. The fact that it is usually economically disadvantaged households that are most likely not to benefit from nutritional supplementation and immunization points to the need for more affordable health clinics that have good facilities. Thus, the provision of additional health clinics, especially in far-flung areas, could dramatically improve child morbidity conditions. Results also show that there is no evidence of gender bias in terms of major childhood disease incidence and treatment patterns in the Philippines.

In terms of programmatic issues, the Local Government Unit (LGU) Performance Program has a significant impact on nutrient supplementation and immunization for BCG and measles. This may reflect efforts to more effectively direct program services to target clients in terms of improved health services. Nevertheless, more efforts could still be made to improve treatment of ARI, diarrhea, and complete DPT and Polio immunization coverage in LPP and non-LPP areas.

Findings also show that the poorest 20% of households are underserved in terms of nutrient supplementation and immunization. In this sense, it may be said that continued efforts by the Expanded Program on Immunization (EPI) and the Department of Health (DOH) to provide more services to this group are still needed.

PART ONE: DETERMINANTS OF INFANT AND CHILD MORTALITY

INTRODUCTION

Infant mortality in the Philippines declined rapidly after World War II, particularly between 1953 and 1957. In the following years, the rate of decline slowed down, especially during the 1960 to 1976 period (Cabigon 1990). The rate of decline then quickened from 1978 until 1982 (Zablan 1988). Official estimates indicate a fluctuating pattern from 1976 to 1990 and then a declining trend from 1990 to 1995 (National Statistical Coordination Board 1993, Cabigon and Flieger 1999). Based on the 1993 and 1998 National Demographic Surveys, under five mortality has declined only slightly (from 54 deaths per 1000 births in 1988-1992 to 48 deaths for the period from 1993-1997), and infant mortality rates have remained unchanged at about 35 deaths per 1000 births (NSO 1999).

Despite the process of medical technology transfer, there remains a conspicuous disparity in infant mortality levels between developed and developing countries (United Nations 1999). Infant mortality is more closely tied to the overall pattern of living

conditions and the health status of the general population. Meng (1986) contends that diseases causing the death of the very young are more easily amended through eradication of poverty, better public health practice and access to health facilities. However, Mosley and Chen (1984) argue that it is within the family, where modern health systems interact most directly with traditional social systems, that most health interventions succeed or fail.

There is therefore a need to better understand the social and economic determinants of infant and child mortality. It may then be possible to better account for the impact of specific interventions and the appropriate point in the life process at which an intervention is effective (Venkatacharya and Teklu 1986).

There have been several studies undertaken regarding the determinants of infant and child mortality in the Philippines. This study aims to identify the effects of selected socioeconomic and proximate determinants on infant and child mortality within the five-year period between 1993 and 1998. This will help determine whether key issues regarding infant and child mortality have been effectively addressed or if there are emerging issues that require attention.

The conceptual tool for this study is based on Mosley and Chen's Framework that operates under the premise that socioeconomic factors affect child survival through proximate determinants. These factors are classified as maternal, demographic, personal illness control and environmental contamination variables.

Review of Literature

Social and Economic Determinants of Child Mortality

Mother's educational attainment is a well-established correlate of lower infant mortality (Cochrane, as cited by Da Vanzo and Habicht 1986). In the context of the Nigerian situation, Caldwell (1979) postulated that an educated mother has the ability to break away from tradition and adopt alternative child care therapies, which in turn benefits child survival.

In the Philippines, several multivariate studies have documented the negative relationship between maternal education and child mortality (Martin et al. 1983, De Guzman 1986, Cabigon 1990, Gultiano 1992, and Park et al. 1994). A significant finding of Cabigon (1990) was the absence of a negative effect between infant/child mortality and education in households without toilet facilities. A previous study by Martin et al. (1983) produced a dampening of the same effect once the type of sanitary facility was taken into consideration. These findings indicate the important influence of other factors (e.g., environmental sanitation) on child mortality aside from maternal education.

Gultiano (1992) notes that maternal education's negative effect is more pronounced in rural areas relative to urban areas in Cebu City. Furthermore, child survival risks were found to have diminished (by 31% and 26% for urban and rural areas respectively) when the mother works outside the home. At the regional level, studies have generally found that Mindanao is a high infant/child mortality region (Zablan 1978, De Guzman 1986). This may be due to depressed living conditions and insufficient exposure to modern medical practices that typify this area (Costello 1990).

In the transitional societies characteristic of many developing countries, childcare often competes with time needed for income-generating work (Birdsall and McGreevey 1978 as cited by Mosley and Chen 1984). In this case, the economic circumstances of the family have a direct bearing on infant/child morbidity and mortality. A wealthy family, for instance, can hire a skilled and attentive nursemaid to care for a child in the absence of the working mother. In a poor family, this may result in child neglect or care by a less skilled sibling (Popkin 1975, Kumar 1977 as cited by Mosley and Chen 1984).

Income and household wealth status influence child health indirectly through a number of factors such as nutrient intake, housing, clothing, and hygienic and preventive care. Households with higher income/wealth status can be reasonably expected to experience lower child mortality risks since it can be assumed that children in more advantaged households will consume more health-enhancing goods and services. The result of a study done by the United

Nations (1985) in Nigeria, Sri Lanka and Thailand tends to support this argument, although unusually high mortality was noted among some families in the highest income groups in Thailand. In Nigeria and Sri Lanka, results suggest that the lowest income groups are at far greater risk of losing a child. There was not much difference between middle and upper income levels.

Another established socioeconomic determinant of child mortality is the place of residence. Though contagious disease and environmental contamination is common in urban areas, research on mortality in developing countries has frequently shown that mortality is lower in cities due to improved access to health care and availability of recent medical advances (United Nations 1985). Once socioeconomic and health factors are controlled, however, different relationships may be evident. Bivariate tabulations from this study show infant mortality rates to be higher in rural than urban areas, whereas multivariate analysis findings indicate the opposite effect (Costello 1990). Furthermore, the more recent multi-variate analyses of Cabigon (1990) and Park et al. (1994) did not show place of residence to be a significant factor influencing child mortality when considered simultaneously with other covariates of child mortality.

The Proximate Determinants of Child Mortality

Environmental and Personal Illness Control Factors

Mosley and Chen (1984) note that levels of potential exposure to disease can be approximated by using simple physical indexes that are known to be strongly correlated with the levels of biological contamination in the environment. Water contamination can be scaled by source of supply and potential fecal contamination and by the presence of latrines or toilets.

The presence of toilet facilities was consistently found to have a strong negative effect on child mortality in the Philippines (Martin et al. 1983, De Guzman 1986, Zablan 1988, Cabigon 1990, and Gultiano 1992). Martin et al. (1983) note that more modern toilet facilities tend to be associated with lower risks of child mortality.

While some previous local studies have not shown that safe water sources reduce infant/child mortality (Martin et al. 1983 and De Guzman 1986), other studies have reported a significant relationship (Zablan 1988 and Gultiano 1992). Cabigon (1990) showed contrasting patterns, with children having unsafe water supplies being more likely to experience lower infant mortality. This implies that there could be more important factors (e.g., practice of boiling water from unsafe sources and the possibility of contaminated pipes) that operated in this case.

While it is evident that environmental contamination raises infant/child mortality risks, the act of seeking preventive and curative services may also reduce infant and child mortality. Access to modern medical facilities throughout a mother's pregnancy and during infancy and childhood is considered to be particularly important in reducing mortality. Access to and utilization of primary health care services have commonly been cited as important factors in reducing infant and child mortality (Caldwell 1986 and Gwatkin 1981 as cited by United Nations 1985).

The negative effects of the presence of a hospital, access to a primary care center, and availability of midwives on neonatal deaths were evident in Engracia's study (1983) of health services in the rural Philippines. However, only the services of a health worker and a hospital proved to have an impact on the rate of post-neonatal deaths. Meanwhile, in a more recent study by Cabigon (1990), prenatal care, places of maternal delivery and birth attendance were not found to be significantly related to child mortality. Cabigon attributes this result to the following conditions: (1) these variables may not be sensitive indicators; (2) prenatal care may be sought but the care and attention to diagnosed problems may not be as effective as in developed countries; (3) there may be a disproportionate selection of high-risk cases from poorer households that are seen in clinics or hospitals; and (4) traditional birth attendants in rural areas may not be providing high quality care.

Maternal and Nutrition Factors

Several studies have consistently demonstrated the positive effect of short birth spacing on infant and child mortality (Hobcraft et al. 1983, De Sweemer 1984, Palloni and Tienda 1986, De Guzman 1986, Zablan 1988, Park et al. 1994, and Cabigon 1997). These studies clearly show that short preceding birth intervals increase mortality risks up to the 24th month of life. The most recent studies conducted by Park et al. (1994) and Cabigon (1997) in the Philippines show that the odds of having an infant die are substantially lower when the previous birth interval is more than two years apart.

The main mechanisms by which short preceding birth intervals act upon child mortality are maternal depletion syndrome and competition for resources among children in the household. A mother who has failed to recover both physically and nutritionally due to frequent childbearing and short birth intervals is more likely to have retarded fetal growth and low birth weight babies, which in turn reduce survival chances. Furthermore, children from closely spaced families may compete for resources, including maternal care in the household. These forms of competition may subject living children to higher risks of mortality due to the sharing of meager resources. However, the impact of competition can vary according to the age of the index child and the level of resources available to the household (Hobcraft et al. 1983 and Palloni and Tienda 1986).

Hobcraft's study (1983) clearly demonstrates that the deleterious effects of closely spaced births decrease during the childhood ages (12-59 months). This finding is supported by Cabigon's most recent study (1997). Palloni (1989) explains that a possible mechanism through which the short preceding birth interval affects infant and child mortality is through retardation of fetal growth resulting in low birth weight and increased death risks due to endogenous causes. This effect peaks early in life and recedes rapidly as the index child ages. The other possible mechanisms are the impairment of the mother's capacity to produce milk for the index child (maternal depletion) and competition of resources among siblings in the household.

The concept of competition likewise operates through parity (the number of children a woman has had). Local studies have shown that infant mortality risks grow with an increase in parity (Zablan 1988 and Park et al. 1994). Zablan (1988) further notes that the young age of the mother is associated with higher infant deaths. These findings suggest that maternal health is compromised by early and frequent childbearing. This leads to higher risks during the first days of an infant's life. Studies relative to maternal factors (age, parity, and birth interval) seem to underscore the importance of family planning as a child survival intervention.

One recognized factor that lengthens a following birth interval is breastfeeding through its effect on postpartum amenorrhea. Aside from its previously noted indirect effect on child survival (by lengthening birth intervals), breastfeeding may directly affect child survival by its role in promoting nutrient intake and protecting against infection. However, the extent of its direct and indirect influence may be relative to external conditions facing the child. Nutrient effect, for instance, may be minimized when other products of similar nutrient quality and quantity are available. The same can be said of its anti-infective properties when the load of opportunistic infection is low or when health care services are available for early treatment of diseases (Huffman and Lamphere 1984).

Several studies (Gray 1981, Cantrelle and Leridon 1971, and Wray 1978 as cited by Palloni and Tienda 1986) contend that the advantages of mother's milk (from both nutritional and anti-infective potential) decrease after the sixth month. Palloni and Tienda (1986) and Palloni (1989) support this contention when the negative effects of breastfeeding on mortality were noted to be much weaker for the age segment between 12-59 months compared to age segments within the first year of life.

Adopting the same analytical strategies of Palloni and Tienda (1986) and Palloni (1989), Cabigon (1997) also found that breastfeeding is most effective in reducing mortality risks during the first two months of life and has a reduced but significant effect at older ages. Studies of Da Vanzo, Butz and

Habicht (1983) and Popkin et al. (1990) also show that breastfeeding effects are stronger during the first six months than the last six months of infancy.

Few studies have sought to establish empirical relations between nutritional status and child mortality in the Philippines. The study of Cresencio and Simpson-Herbert on the correlation of breastfeeding and child survivorship (1985), as reviewed by Costello (1990), points to a positive effect of breastfeeding on the health of a subsequent child. Cabigon (1990) found significant positive effects of breastfeeding and food supplementation on child mortality. However, it should be noted that these results may have been largely attenuated by circular causation and censoring effects. In Cabigon's more recent study (1997) on the effects of birthspacing and breastfeeding on childhood mortality, the breastfeeding variable was operationally defined to reduce the problems created by censoring or truncation of breastfeeding due to the death of the index child.

Data and Methods

The data for this analysis are drawn from the 1998 National Demographic and Health Survey (NDHS) conducted by the National Statistics Office (NSO) in collaboration with the Department of Health (DOH). This nationwide sample survey is designed to collect information on fertility, family planning and health in the Philippines. The 1998 NDHS was undertaken as part of the worldwide Demographic and Health Survey Project implemented by Macro International in Calverton, Maryland.

The 1998 NDHS surveyed 13,983 women aged 15-49 years of age. Births to women in the five-year period prior to the date of interview are utilized as the unit of analysis. Owing to the differing determinants of infant and childhood mortality, three analyses were done using the following dependent variables: mortality from birth through 11 months of age (infant mortality), mortality from 12 through 59 months of age (child mortality) and mortality from 0 through 59 months of age (under-five mortality). The following factors are examined for each birth.

Maternal and Nutrition Variables: (a) age of mother at the birth of the child (in years); (b) birth order; (c) the length of the preceding birth interval (in months: 9-19, 20-29, 30-39, 40 thru highest, and 1st births); (d) duration of breastfeeding (in months); (e) age at introduction of other food/liquids (in months: no supplementation; 0-2 months; 3-5 months and 6-51 months).

A recognized methodological difficulty encountered in the use of birth intervals is the possibility that child mortality risks may be accounted for by other factors. For instance, the death of a child will result in the rapid closure of a birth interval due to curtailment of postpartum ammenorrhea and possible replacement motivated behavior. Since the health conditions of children born to the same mother are correlated, an increased risk of death for the child closing an interval (in the event of a child death) may not necessarily be accounted for by the shortened birth interval created with respect to the preceding child. On the other hand, the shortened succeeding birth interval produced in the same case becomes the outcome and not the cause of the survival status of the child (index) who died. Hobcraft et al. (1983) and Palloni and Tienda (1986) thus quantified the effect of the following birth interval in such a manner that the survival of the index child was ascertained with respect to the conception of the subsequent child.

A problem with the direction of causality may also occur with the breastfeeding variable. As stressed by Palloni (1989), it is possible that a child death would lead to no-breastfeeding rather than the reverse. For instance, there are cases where breastfeeding may never have started due to *in utero* conditions precipitating an infant death at birth. Moreover, contraction of diseases leading to cessation of lactation and death of an infant may exaggerate the positive effect of breastfeeding on the survival of the child.

Furthermore, it is noted that the average duration of breastfeeding among children who die before a certain age is invariably shorter than among those who survive beyond that age. A similar difficulty in terms of censoring is also encountered with the supplementation variable in the sense that children

who live longer may more likely receive supplemental feeding. These censorship problems can cause distortions in the association between breastfeeding and child mortality (Palloni 1989).

In this study, the above-mentioned methodological difficulties relative to the birth interval and nutrition variables were not dealt with specifically. Despite these limitations, the results derived from this study may still provide a useful assessment of factors determining infant and child mortality in the Philippines.

Socioeconomic Variables: (a) current residence (rural and urban); (b) region of residence (National Capital Region or NCR, and the rest of Luzon, Visayas and Mindanao); (c) household wealth index (poorest 20%, 20-40%, 40-60%, 60-80%, and the richest 20%); (d) maternal educational attainment (no education, primary level, secondary level and college level and higher); (e) maternal employment status (working and not working); (f) exposure to media in the form of newspapers, radio and television respectively (yes and no).

For the region of residence, a separate category is created for the National Capital Region where more modern medical facilities and technologies are available. This category in turn, is used as the reference category for the region of residence variable.

Environmental Variables: (a) source of drinking water supply (piped into dwelling/yard/plot, public tap, well, and spring/stream/dam/tanker-truck/ others); (b) type of toilet facility (own flush toilet, shared flush toilet, pit latrine/toilet and drop/overhang/ field/no facility).

The socioeconomic and environmental variables are measured at the time of the survey and may not refer to characteristics at the specific time when the child was exposed to the risk of death (Cabigon 1990). Due to this data limitation, it is assumed that these covariates did not vary during the five-year period preceding the date of survey.

Personal Illness Control Variables: (a) LPP province (LPP area or non-LPP area); (b) prenatal/postnatal care in response to the dichotomous question "When you were pregnant with this child, did you see anyone for prenatal/postnatal care for this pregnancy? (c) place of delivery (home delivery, public facility and private facility); (d) assistance during delivery (yes, some assistance and no assistance); (e) utilization of health facility for the last six months (utilization or non-utilization); (f) tetanus toxoid injection during pregnancy (ever injected with tetanus and never injected with tetanus).

The Method of Analysis

This study makes use of the Cox Proportional Hazards Model. Life tables serve as the building block of the hazard model. The duration of exposure to death is defined in one-month time intervals, with time measured from the birth of the child. The hazard rate is calculated as the number of child deaths during the interval divided by the product of the time interval and the average number of children alive during the interval, adjusted for censoring. The knowledge that censored cases survived the interval may thus be put to use to increase the estimated probability of child death.

The entire set of time-specific hazard rates comprise the hazard function, which in turn is the response variable of the Cox proportional hazard model. In this model, the hazard is not only a function of time but also of specified predictor variables that allow for a certain amount of heterogeneity. While it may be viewed as a multivariate life table, the main purpose of the model is not to calculate life tables but to assess the effect of predictor variables on the hazard function (Retherford and Choe 1993). The model can be written as:

$$h(t) = [h0(t)]\, e \exp(BX)$$

where B is a regression coefficient, e is the base of the natural logarithm and h0 (t), the baseline hazard function when X is set to 0 (the reference category).

Assuming that X is a dichotomous covariate that takes the value 0 for the reference category, the expected risk of death for the considered category is equal to the risk of death of the reference category multiplied by the quantity e raised to the power (BX). For variables with more than one category, a reference category is designated and the risks are interpreted in relation to that category. Ratios lower than one signify a reduced risk of

Table 1.1 Percentage of Women with Births in the Five Years preceding the 1998 NDHS, Socioeconomic Variables

Socioeconomic Variables	Infants	Children 12-59 Months of Age	Children Under 5 Years of Age
Region			
Rest of Luzon	35.1	34.9	35.0
Visayas	20.6	20.7	20.7
Mindanao	37.8	37.6	37.7
NCR	6.4	6.8	6.7
Place of Residence			
Urban	36.8	38.0	37.8
Rural	63.2	62.0	62.2
Wealth Index			
Poorest 20%	24.2	21.6	22.2
20-40%	16.4	17.9	17.6
40-60%	20.0	19.4	19.6
60-80%	19.4	20.1	20.0
Richest 20%	20.0	21.9	22.1
Educational Attainment			
No education	3.8	3.4	3.5
Primary level	35.5	38.1	37.5
Secondary level	37.9	36.6	36.9
College and higher	22.8	21.9	22.1
Work Status			
Not working	72.5	60.2	63.0
Working	27.5	39.8	37.0
Watches TV Once a Week			
No	41.4	38.4	39.1
Yes	58.6	61.6	60.9
Reads News Once a Week			
No	54.1	53.9	54.0
Yes	45.9	46.1	46.0
Listens to Radio Everyday			
No	26.3	26.3	26.3
Yes	73.7	73.7	73.7

death in that category compared to the reference category, while ratios greater than one indicate a greater risk of death compared to the reference category. When X is a continuous variable, increasing X by one unit has the effect of multiplying the hazard rate by e^{expB}. The effects are thus multiplicative using the log to achieve linearity (as in the logistic regression model).

The equation furthermore illustrates that the hazard at one setting of explanatory variables is proportional to the hazard rate at another setting, with the same proportionality constant regardless of time (t). It is due to this property that the model is called a proportional hazards model (Agresti and Finlay 1997).

Background Characteristics

As shown in Table 1.1 (column 3), most women reside in Mindanao and areas of Luzon outside Metro Manila. Within the country as a whole, the majority of women live in rural areas. On average, only 3.5% of the mothers had no education, with most having reached primary or secondary educational levels. It is noted, however, that only 22.1% reached college and higher levels of education. Consequently, a great majority of women are not working. In terms of media exposure, most women listen to the radio everyday and watch television once a week while more than half of all women do not read a newspaper at least once a week.

Table 1.2 reports that almost half of all currently married women in the 1998 NDHS live in households with flush toilets. The other half live in households with pit toilets, drop, overhang or no toilet facilities at all. Only 32.8% of the respondents have piped water supply and almost a half obtain their water from wells. The remaining women have varied sources of water.

Most births (43%) have relatively short preceding birth intervals of 9-29 months. Few children (33.8%) have longer preceding birth intervals of 30-39 months (see Table 1.3). The mean durations of breastfeeding for infants and children are 4.2 and 11.8 months respectively. Almost half of all children are supplemented at 3-5 months while others are supplemented at later ages. Some children are supplemented as early as 0-2 months and 32.5% (infants) and 10% (children) receive no supplementation at all.

Almost all women receive prenatal care and more than half receive tetanus toxoid injections during pregnancy (see Table 1.4). Only 28% of all children are delivered in public or private health facilities. In addition, nearly all women receive postnatal care during their pregnancies. Most women have visited a health facility during the previous 12 months and live in areas with local government units participating in the LGU Performance Program.

Table 1.2. Percentage of Women with Births in the Five Years preceding the 1998 NDHS by Environmental Characteristics, 1998

Environmental Variables	Infants	Children 12-59 Months of Age	Children Under 5 Years of Age
Type of Toilet Facility			
Own flush toilet	37.0	33.7	34.2
Shared flush toilet	8.7	12.3	11.8
Pit toilet	19.6	25.0	24.2
Drop/Overhang/ Field/None	34.8	29.0	29.8
Source of Drinking Water			
Piped into dwelling/ yard	17.0	15.9	16.1
Public tap	17.0	16.7	16.7
Well	44.7	48.6	48.0
Spring/River/Stream/ Pond/Lake/Dam/ Rain Water	21.3	18.8	19.2

Table 1.3. Percentage of Women with Births in the Five Years preceding the 1998 NDHS, Demographic Variables, 1998

Demographic Variables	Infants	Children 12-59 Months of Age	Children Under 5 Years of Age
Maternal Age at Birthmother	28.8	30.7	30.2
Birth Order	4.0	4.0	4.0
Gender of child			
Male	53.6	51.8	52.2
Female	46.4	48.2	47.8
Preceding Birth Interval			
9-19 Months	16.7	17.9	17.6
20-29 Months	24.3	25.3	25.1
30-39 Months	12.5	13.4	13.2
40-Highest Months	23.3	19.8	20.6
First Born Children	23.2	23.6	23.5

Multivariate Results and Discussion

Socioeconomic Variables

As has been shown in previous studies in the Philippines (Martin et al. 1983, De Guzman 1986, Gultiano 1992, Cabigon 1990, and Park et al. 1994), the educational attainment of the mother is an important socioeconomic determinant of early and late childhood mortality. Results in Table 2 indicate that children having mothers with relatively lower educational attainment experience higher risks of infant, child and under-five deaths. However, it is worth noting that there is no significant difference in the risks of

Table 1.4. Percentage of Women with Births in the Five Years preceding the 1998 NDHS, Personal Illness Control and Nutrition Variables, 1998

Personal Illness Control and Nutrition Variables	Infants	Children 12-59 Months of Age	Children Under 5 Years of Age
Prenatal None			
No (Some care)	89.7	91.6	91.2
Yes	10.3	8.4	8.8
Place of Delivery			
Home delivery	72.2	71.8	71.9
Public facility	17.5	17.2	17.2
Private facility	10.3	11.0	10.8
Delivery Assistance: None			
No (Some assistance)	99.8	99.3	99.7
Yes (None)	0.2	0.7	0.3
Postnatal Care: None			
No (Some care)	52.6	56.2	55.4
Yes (None)	47.4	43.8	44.6
Tetanus During Pregnancy			
No	44.9	45.2	45.1
Yes	55.1	54.8	54.9
Mean Breastfeeding Duration (in Months)	4.2	11.8	10.0
Food Supplementation			
0-2 Months	29.0	9.1	21.3
3-5 Months	31.4	50.7	46.3
6-51 Months	7.2	20.2	17.3
None	32.5	10.0	15.0

Table 1.5. Percentage of Women with Births in the Five Years preceding the 1998 NDHS, additional Personal Illness Control Variables, 1998

Personal Illness Control and Nutrition Variables	Infants	Children 12-59 Months of Age	Children Under 5 Years of Age
Visited Health Facility in the Last 12 Months			
No	24.9	34.6	32.4
Yes	75.1	65.4	67.6
LGU Performance Program			
LPP province	73.3	73.9	73.8
Non-LPP province	26.7	26.1	26.2

child mortality between mothers who have reached secondary education and mothers in collegiate and higher education categories. This result suggests that secondary education may adequately equip mothers with sufficient knowledge to enhance child survival.

While education demonstrates a negative effect on child death in general, mother's employment increases the risk of infant mortality by 42% (reduced model result). This finding is consistent with Gultiano's analysis (1992) of child survival in Cebu City that noted a positive influence of maternal employment, even after controlling for the effects of other socioeconomic measures. Mother's employment is believed to affect child mortality through child neglect and malnutrition (due to the abandonment of breastfeeding). Since socioeconomic status and breastfeeding is controlled for in this study, the significant result of mother's employment suggests that its positive effect is not offset by the economic capacity of the family to hire a skilled child caretaker. As argued by Ware (1984), working mothers may stand to lose the most by entrusting the care of their children to poorly educated servants.

Household wealth status is a significant factor associated with infant and under-five mortality. Compared to the richest 20% of the population, the poorest 20% and 40-60% of households experience higher risks of infant and under-five mortality. For example, the poorest 20% of households are 154% and 161% more likely to

experience an infant and under-five child death in the first five years of life compared to the richest 20% of households.

Women who live in urban areas experience significantly fewer risks of under-five mortality. The odds of having a child die in the first five years of life are 29% lower in urban than rural areas. This result may be due in part to the availability of recent medical advances and access to health care in urban areas. Unlike findings from previous studies (Martin et al. 1983, Cabigon 1990, Park et al. 1994), the positive effect of urban residence remains significant when considered with other covariates of child mortality. On the other hand, no significant difference in the mortality experience of children living in Luzon (outside Manila), Visayas and Mindanao relative to the National Capital Region is noted. As of 1998, there appears to be no strong regional differentials in infant and child mortality in the Philippines.

The exposure to media in the form of television, newspaper and radio has no effect on infant, child and under-five mortality. It would appear that media messages concerning infant and child health are either not reaching their intended audiences or are inadequately crafted to convey essential information. Another possibility is that the audience for IEC (information, education, communication) child survival messages may now be saturated to the point that there are no longer major segments of the population lacking essential childcare information.

The Demographic Variables

For the analysis of the preceding birth interval, the assigned reference category consists of children with preceding birth intervals of 40 months or more. These children are perceived to be in an advantageous position as they are not affected by maternal depletion and competition brought about by closely spaced births. The same can be said for first-born children, although previous studies indicate higher mortality among these children due to other physiological and maternal factors.

Among infants dying on the first year of life, the odds of having an infant die in the first year of life are elevated for shorter birth intervals. However, this association fails to be statistically significant. Infants having the shortest preceding birth interval of 9-19 months do not have a significantly greater risk of dying compared to children with the longest preceding birth interval of 40 or more months. This finding is not consistent with the majority of earlier studies where short preceding birth intervals were associated with higher infant mortality (Hobcraft et al. 1983, De Sweemer 1984, Palloni and Tienda 1986, De Guzman 1986, Zablan 1988, Park et al. 1994, and Cabigon 1997). In addition, no significant effects for the preceding birth interval were noted for child mortality in this particular study. As noted earlier, Hobcraft et al. (1983) and Cabigon (1997) found that the deleterious effects of nearby births decrease during the childhood years (ages 12-59 months).

The effect of a related maternal covariate is only significant with child mortality. The birth order of the child also has no effect on infant and child mortality in this analysis. While previous Philippine studies (Zablan 1988 and Cabigon 1990) note higher infant and child mortality among younger and much older mothers, this result is not obtained in the Cox regression estimates presented in Table 2.

Another important finding is the insignificant effect of child's gender on infant and child mortality. This result suggests an absence of strong gender preference in the Philippines, including preferential gender bias in wantedness, child nutrition and medical care.

Nutrition Variables

Both supplementation and breastfeeding play a significant role in infant and under-five survival. Relative to children who did not receive any supplementation, those who received supplementation in solid or liquid form face significantly lower risks of death. It is further observed that children who start receiving supplementation at 3-5 months experience the lowest relative risk of death. Consequently, longer breastfeeding durations significantly reduce the risks of infant, child and under-five mortality.

Table 2. Hazard Model Estimates of Relative Risks for Infant, Child, and Under 5 Mortality, 1998

Characteristics	Full Model			Reduced Model		
	Infant Mortality	Child Mortality	Under 5 Mortality	Infant Mortality	Child Mortality	Under 5 Mortality
Socioeconomic Variables						
Region						
Reference - NCR						
Rest of Luzon	.90	.42	1.02			
Visayas	.62	.74	.94			
Mindanao	.91	.53	1.05			
Place of Residence						
Reference - Rural						
Urban	.78	.66	.72*			.71*
Wealth Index						
Reference - Richest 20%						
Poorest 20%	2.09	2.56	3.00*	2.55*		2.60*
20-40%	1.59	1.83	1.77	2.03*		1.60
40-60%	1.68	2.45	2.04*	2.01*		1.81*
60-80%	1.11	2.93	1.32	1.26		1.23
Educational Attainment						
Reference- Post secondary						
No-education	3.03*	7.30	2.92*	3.84*	17.07*	3.20*
Primary level	2.27*	10.11*	2.60*	2.78*	15.30*	2.51*
Secondary level	1.56	4.51	1.56	1.78*	6.43	1.52
Work Status						
Reference - Working						
Not Working	.56*	1.83	.86	.58*		
Watches TV at least Once a Week						
Reference - Yes						
No	.10	.79	1.16			
Reads Newspaper at least Once a Week						
Reference - Yes						
No	.93	1.02	.90			
Listens to Radio Everyday						
Reference - Yes						
No	.74	1.10	.85	.75		

Demographic Variables					
Gender of Child					
Reference - Female					
Male	.84	1.25	1.02		
Age of Mother at Birth	.99	1.08*	1.00	1.05*	
Birth Order	1.01	.95	.99		
Preceding Birth Interval					
Reference - 40 thru High					
9-19 Months	1.34	1.96	1.18		
20-29 Months	.80	1.19	.88		
30-39 Months	1.08	1.15	1.13		
First Born Children	.89	1.19	.82		
Environmental Variables					
Type of Toilet Facility					
Reference- No facility					
Own flush toilet	1.07	1.16	1.10		
Shared flush toilet	.94				
Pit toilet	.89	.94	.94		
Source of Drinking Water					
Reference- Others					
Piped into Dwelling/Yard	.90	.39	1.12	.28	1.06
Public Tap	1.42	2.25	1.99	1.93	1.85
Well	1.02	1.95	1.38	1.68	1.30
Health Variables					
Prenatal: None					
Reference-Yes (None)					
No (Some care)	.83	.61	.70*		.66*

Table 2 (continuation)

Characteristics	Full Model			Reduced Model		
	Infant Mortality	Child Mortality	Under 5 Mortality	Infant Mortality	Child Mortality	Under 5 Mortality
Place of Delivery						
Reference- Private facility						
Home delivery	1.89	1.86	2.29*			2.37*
Public facility	1.64	1.41	1.71			1.70
Delivery Assistance: None						
Reference -Yes (None)						
No (Some assistance)	1.11	.11*	.47		.11*	
Postnatal: None						
Reference -Yes (None)						
No (Some care)	1.06	1.19	.95			
Tetanus during Pregnancy						
Reference - No						
Yes	.67*	.71	.70*	.65*		.73*
Visited Health Facility in Last 12 Months						
Reference -Yes						
No	1.43*	1.33	1.10	1.49*		
Residence in LPP Area in Last 12 Months						
Reference - Non-LPP						
LPP Residence	1.06	.43*	.84	.46*		
Nutrition Variables						
Food Supplementation						
Reference - None						
0-2 Months	.90	.87	.89	.88		.90
3-5 Months	.33*	.87	.30*	.34*		.30*
6-51 Months	.49	1.07	.33*	.45*		.34*
Months of Breastfeeding	.84*	.90*	.85*	.85*	.91*	.85*

Environmental Contamination and Personal Illness Control Factors

Children whose families obtain water from public taps experience greater risks of under-five child mortality deaths compared to other unsafe water sources (e.g., springs, rivers, streams, and rainwater). This result is unexpected since a relatively safer source of water is generally associated with lower child mortality risks. Factors other than the actual source of water may mainly operate in this case (e.g., behavioral practices of boiling water from unsafe sources and the possibility of contaminated pipes) (Cabigon 1990).

Contrary to findings from previous studies (Martin et al. 1983, De Guzman 1986, Zablan 1988, Cabigon 1990, Gultiano 1992), the type of toilet facility is observed to have no significant bearing on infant deaths in this study. Other intervening factors not included in previous studies (e.g., the overall wealth status of households) may be responsible for reducing the impact of toilet facility as an explanatory variable.

Mothers who have sought prenatal care during pregnancy have a 34% reduced likelihood of having a child die in the first five years of life. Likewise, those who have sought assistance during delivery experience fewer risks of having a child die. Those who deliver at home have significantly higher risks of under-five child mortality (by 137%) compared to women who deliver in a private facility. Not visiting a health facility in the past six months raises the risk of having a child die in the first 12 months of life by 49%. In addition, postnatal care has no significant association with child mortality at any age.

In addition, mothers who received tetanus toxoid injections during pregnancy experience reduced risks of infant mortality (by 35%) and under five child mortality (by 30%) in contrast to those who did not obtain TT injections. Tetanus of the umbilicus is responsible for a substantial proportion of infant and neonatal mortality in regions where deliveries occur under poor hygienic conditions (often typical in home deliveries) and are performed by untrained traditional birth attendants or relatives (Ewbank and Gribble 1993).

While there is no significant difference between LPP and non-LPP provinces in terms of infant mortality, children aged 1-4 years are 53% less likely to experience mortality (reduced model) in LPP provinces compared to their counterparts in non-LPP provinces. This indicates some positive results of interventions implemented in collaboration with local governments.

These findings emphasize the importance of medical and preventive care during pregnancy and delivery as well as of utilization of health facilities for infant, child and under-five survival. When incorporated within the health care system, family planning clearly serves as an important child survival intervention by lengthening the intervals between births.

Conclusions and Recommendations

This study sought to determine the effects of selected socioeconomic and proximate determinants on infant and child mortality within the period from 1993-1998. Maternal educational attainment emerges as the strongest socioeconomic determinant during early and late childhood mortality. Negative effects of urban residence and household wealth on under-five mortality are evident. However, mothers who are working appear to face much higher infant mortality risks. This finding suggests that the lengthening of maternity and paternity leaves from four months to a much more reasonable period (say 12 months) could be a useful approach for further reducing the rate of infant mortality.

For the analysis of birth interval variables, infants having the shortest preceding birth interval of 9-19 months did not have significantly higher risks of death than infants with the longest preceding birth interval of 40 or more months. This result is not consistent with previous studies that have examined birth interval effects in the Philippines. As for other demographic variables, the age of the mother at delivery exerts a positive influence on child mortality, while no significant effect was noted for the birth order and gender of the child. A positive relationship between

infant/child mortality and the total number of children ever born is also present.

The effects of supplementation and longer durations of breastfeeding are observed in reducing child mortality. Simple policy measures to stimulate longer breastfeeding and introduce more widespread food supplementation may therefore contribute to further reductions in child mortality.

Women who receive tetanus toxoid during pregnancy and who receive prenatal care experience reduced under-five mortality. Women who seek assistance during delivery have lower risks of child death while women who deliver at home experience greater risks of under five deaths compared to those who deliver in private facilities. It is also important to note that mothers who have visited a health facility during the last 12 months also experience lower risks of having an infant die. These findings highlight the importance of medical and preventive care during pregnancy and delivery.

For the analysis of the environmental contamination variables, no significant effects were noted by type of toilet facility. While the positive effect of a safe water supply is observed for under-five mortality, the source of drinking water is not a crucial factor for infant mortality. The high level of breastfeeding within the first 12 months of life may be responsible for the weak effect of drinking water source on infant mortality.

Several policy implications and insights can be derived from the findings in this study. With maternal education noted to be the most important socioeconomic determinant of child mortality, policy efforts to upgrade the formal educational attainment of women to at least secondary education can significantly reduce early and late childhood mortality. Directing short-term educational programs toward women (especially out-of-school adolescents) and child caretakers, can also be incorporated within health programs in areas or communities where these programs are underway.

Simple policy measures to stimulate breastfeeding and supplementation can be undertaken and efforts to promote reproductive health should be continued and strengthened with emphasis on family planning as well as maternal and child health care. Making improvements in delivery practices (such as increasing the proportion of deliveries in hospitals/dispensaries and enhancing provider competency, especially among traditional birth attendants) and increasing tetanus toxoid coverage are important policy options for reducing infant and child mortality. Moreover, improving the availability of health facilities in rural areas will likely improve health facility utilization, including the use of prenatal, delivery, and postpartum services. Since residence in an LPP area is found to be effective in significantly reducing child mortality, more intensive program efforts may promote further declines in infant and child mortality.

PART TWO: DETERMINANTS OF CHILD MORBIDITY AND PATTERNS OF TREATMENT

INTRODUCTION

Infant and child mortality levels in the Philippines remain high due to infectious diseases such as acute respiratory infection (ARI) and diarrhea. Acute respiratory infections and diarrheal diseases comprise approximately 22% and 8%, respectively, of total child deaths (DOH 1994).

Illnesses such as these can be averted through preventive and curative interventions. For example, breastfeeding and hygienic food preparation can help prevent diarrhea while oral rehydration therapy can be an effective yet inexpensive treatment for diarrhea. Furthermore, reducing the burden of excess mortality and morbidity may mean revitalizing and extending the coverage of immunization programs. The Extended Program on Immunization (EPI) is still one of the most powerful and cost-effective technologies available for reducing child morbidity and mortality (WHO 1999).

This analysis addresses the following issues pertaining to child morbidity and patterns of treatment. First, what are the factors that affect the probability of occurrence of ARI and diarrhea among children below five years of age? Second, what are the determinants of medical treatment when a child suffers from either ARI or diarrhea? And third, what factors determine the utilization of other health interventions such as immunization and nutritional supplementation with vitamins and minerals?

Design of the Study

Data for this study comes from the 1998 Philippine NDHS. This is a nationally representative survey of 13,983 ever-married women aged 15-49. Children who were born in the last five years and are still alive at the time of the survey are cases for this study (7,286 children).

The NDHS questions on respiratory morbidity inquire into the presence of fever, cough, as well as short and rapid breathing two weeks before the survey period. Children with coughs, who breathe faster than usual, and have short fast breaths are considered to have contracted ARI. The determination of diarrhea is more straightforward in that mothers are simply asked whether or not their children had diarrhea in the two-week period prior to interview.

Information on treatment patterns refer only to children who are ill with ARI and diarrhea. Thus, there is a substantial reduction in sample size–966 cases for ARI and 539 cases for diarrhea. The mother is asked whether or not the child was given oral rehydration salts (ORS) and whether medical treatments were sought for ARI.

Data on child immunization is derived by asking mothers whether or not the child has received the complete series of four vaccinations; namely BCG, measles, DPT (three dosages) and polio (three dosages) before the child's first birthday. A separate analysis is conducted for each type of immunization since not all vaccines are administered at regularized intervals, contrary to some expectations. Also, only children between 12-59 months of age are included in this analysis. Analysis of vitamin and mineral supplementation refers to vitamin A, iron and iodine supplementation given to children in the six-month period prior to the survey.

Method of Analysis

Whether a child had ARI or diarrhea in the two weeks before the survey period is employed as a dichotomous dependent variable. Logistic regression is used to determine the relationship between the dependent variable and the explanatory variables.

The logistic regression model fitted to the data as follows:

$$\text{Logit } P = a + b1X1 + b2X2 + \ldots + bkXk$$

where: P= the probability of the reference child having had ARI or diarrhea

b1, b2...bk = regression coefficients

X1, X2..Xk = explanatory variables included in the model

The same method of analysis is employed for assessing the determinants of treatment patterns for immunization and nutritional supplementation.

Bivariate Relationships

Prevalence and Treatment of ARI and Diarrhea

Table 3 shows that 966 out of 7,286 children (13.4%) have coughs plus rapid breathing two weeks before the survey period. Among the 966 children with ARI, 57.9% are reported to have been taken to a health facility.

The age-specific prevalence rate for ARI shows a peak in the 12-23 month age group of children, although most studies from developed and developing countries demonstrate a higher prevalence at 6-12 months of age (Steinhoff 1991). Most of the children taken to a health facility are below one year of age. These infants may be perceived as more vulnerable and therefore worthy of greater attention (Costello et al. 1994).

While there is no difference in ARI prevalence between boys and girls, boys are more likely to be treated than girls (61.1% versus 54.4%). ARI is also higher with increasing birth order. However, the possibility of being treated decreases with increasing birth order. Children born to the youngest mothers show the highest ARI prevalence and are more likely to be brought to a health facility. While there are no marked variations in ARI among the major island groups, there is a substantial regional variation in treatment patterns, with children in the NCR being

Table 3. Prevalence and Treatment of Acute Respiratory Infection among Children below Five Years Old by Socioeconomic and Demographic Characteristics, Philippines 1998

Background Characteristic	Children with cough and rapid breathing (ARI)	N*	Children taken to a health facility	N*
Age of child				
Under 6 months	11.0	87	63.2	55
6-11 months	14.9	110	74.5	82
12-23 months	17.9	261	59.4	155
24-35 months	15.3	217	51.2	110
36-47 months	12.0	166	53.3	89
48-59 months	9.0	125	54.4	68
Sex of child				
Male	13.7	516	61.1	314
Female	13.2	450	54.4	245
Birth order				
1	11.9	216	66.7	144
2-3	13.0	357	61.4	218
4-5	13.0	191	54.2	104
6 +	17.2	201	46.5	94
Place of residence				
Urban	12.0	394	64.6	254
Rural	14.6	571	53.3	305
Region				
Luzon	14.5	424	57.8	244
Visayas	13.4	207	52.7	109
Mindanao	11.9	208	56.3	117
NCR	13.1	127	70.1	89
Mother's education				
No education	14.5	24	45.8	11
Elementary	15.9	377	47.2	178
High school	13.2	369	67.0	246
College and higher	10.7	196	63.3	124
Age of mother				
15-19	15.3	29	72.4	21
20-29	13.4	456	62.8	285
30-39	13.5	404	53.2	215
40 +	13.2	77	48.1	37
Mother's work status				
Currently working	13.9	374	54.7	204
Not working	13.2	592	60.1	355
Wealth index				
Poorest 20%	15.9	155	50.3	77
20-40%	14.7	259	46.7	121
40-60%	13.6	238	62.2	148
60-80%	12.1	174	66.3	116
Richest 20%	11.0	122	68.9	84
LPP area				
LPP	13.7	677	57.3	387
Non-LPP	13.0	289	59.5	172
No. of persons sleeping/room				
0-3 persons	12.3	445	63.1	281
>3 persons	14.6	520	53.5	277
Child wanted				
Yes	12.4	483	62.7	303
No	14.7	483	53.1	256
Vitamin A supplementation				
Yes	13.5	689	–	–
No	13.5	276	–	–
Iron supplementation				
Yes	13.1	531	–	–
No	14.0	429	–	–
Breastfeeding				
Yes	13.7	875	–	–
No	11.4	89	–	–
Age at introduction of supplement foods				
0-2 months	12.0	196	–	–
3-5 months	13.6	454	–	–
6 + months	16.7	191	–	–
no supplemental feeding	11.5	120	–	–
Visited a health facility in last 12 months				
Yes	62.4	453	–	–
No	44.5	106	–	–
Reads news once a week				
Yes	64.6	307	–	–
No	51.4	251	–	–
Listens to radio everyday				
Yes	60.0	422	–	–
No	52.5	137	–	–
Watches TV once a week				
Yes	63.0	409	–	–
No	47.3	147	–	–
TOTAL	13.4	966	57.9	559

*The N for some variables is lower than the total N because of the exclusion of cases with no information on such variables.

most likely to be taken to a health facility. As anticipated, children with less educated mothers have more ARI and are less likely to be treated.

While ARI prevalence does not differ between currently and not currently working mothers, those children with ARI who have non-working mothers are more likely to be brought to a health facility. In addition, children from the poorest 20% of households tend to have the highest levels of ARI (15.9% have ARI two weeks prior to interview compared to 11.0% in the richest 20% of households). They also have the lowest treatment level (50.3% are taken to a health facility compared to 68.9% in the richest 20% of households).

Table 4. Prevalence of Diarrheal Disease by Socioeconomic and Demographic Characteristics, Philippines 1998

Background characteristic	Diarrhea	N*
Age of child		
Under 6 months	6.9	55
6-11 months	14.0	103
12-23 months	13.2	193
24-35 months	5.8	83
36-47 months	3.9	54
48-59 months	3.7	51
Sex of child		
Male	7.8	294
Female	7.2	245
Birth order		
1	7.3	133
2-3	7.3	201
4-5	7.2	106
6 +	8.6	100
Place of residence		
Urban	6.6	218
Rural	8.2	321
Region		
Luzon	7.3	213
Visayas	9.1	140
Mindanao	7.5	130
NCR	5.8	57
Mother's education		
No education	7.2	12
Elementary	8.6	204
High school	7.3	205
College and higher	6.5	119
Age of mother		
15-19	11.6	22
20-29	8.2	279
30-39	6.6	200
40 +	6.5	38
Mother's work status		
Currently working	8.2	221
Not working	7.0	316
Wealth index		
Poorest 20%	9.5	93
20-40%	8.7	153
40-60%	7.0	123
60-80%	6.9	100
Richest 20%	5.0	55
Toilet facility		
Own flush	6.5	231
Shared flush	8.2	93
Pit (closed or open)	7.8	87
No facility	9.5	114
Source of drinking water		
Piped into dwelling	6.3	143
Public tap	8.5	79
Well	7.9	230
Unprotected sources (e.g. bodies of water)	7.6	74
LPP area		
LPP	8.2	407
Non-LPP	5.9	132
No. of persons sleeping/room		
0-3 persons	7.5	270
>3 persons	7.5	269
Child wanted		
Yes	6.6	257
No	8.6	282
Vitamin A supplementation		
Yes	7.4	380
No	7.7	159
Iron supplementation		
Yes	7.2	293
No	7.9	243
Breastfeeding		
Yes	7.6	489
No	6.1	48
Age at introduction of supplement foods		
0-2 months	6.2	102
3-5 months	8.3	280
6 + months	8.4	97
no supplemental feeding	5.4	57
TOTAL	7.5	540

*The N for some variables is lower than the total N because of the exclusion of cases with no information on such variables.

Table 5. Treatment of Diarrheal Disease by Socioeconomic and Demographic Characteristics, Philippines 1998

Background characteristic	Children taken to a health facility	N*	Children administered with ORESOL	N*
Age of child				
Under 6 months	36.4	20	30.9	17
6-11 months	51.0	52	47.1	48
12-23 months	41.5	80	45.1	87
24-35 months	43.9	36	37.8	31
36-47 months	50.0	27	50.0	27
48-59 months	43.1	22	48.0	24
Sex of child				
Male	43.7	128	41.2	121
Female	44.1	108	46.5	113
Birth order				
1	49.6	65	42.4	56
2-3	44.3	89	48.5	96
4-5	42.5	45	39.0	41
6 +	38.0	38	40.0	40
Place of residence				
Urban	47.7	104	45.1	97
Rural	41.3	132	42.5	136
Region				
Luzon	38.7	82	41.8	89
Visayas	43.2	60	43.2	60
Mindanao	46.5	60	43.4	56
NCR	59.6	34	51.9	28
Mother's education				
No education	16.7	2	50.0	6
Elementary	37.4	76	38.2	78
High school	45.1	92	50.5	102
College and higher	5.5	66	40.7	48
Age of mother				
15-19	31.8	7	36.4	8
20-29	48.2	134	46.2	129
30-39	39.8	80	41.4	82
40 +	42.1	16	40.5	15
Mother's work status				
Currently working	44.3	98	47.3	104
Not working	43.4	137	40.6	128
Wealth index				
Poorest 20%	39.8	37	47.3	44
20-40%	41.8	64	41.2	63
40-60%	44.7	55	48.0	59
60-80%	49.0	49	42.0	42
Richest 20%	45.5	25	37.7	20
LPP area				
LPP	43.8	178	42.1	171
Non-LPP	44.7	59	47.7	62
No. of persons sleeping /room				
0-3 persons	43.5	117	42.0	113
>3 persons	44.4	119	45.1	121
Child wanted				
Yes	44.7	115	44.4	114
No	43.1	121	42.7	119
Visited a health facility in last 12 months				
Yes	47.6	186	45.9	180
No	34.2	50	36.8	53
Reads news once a week				
Yes	47.8	141	45.7	134
No	39.5	96	41.2	100
Listens to radio everyday				
Yes	46.8	190	44.2	179
No	35.3	47	41.7	55
Watches TV once a week				
Yes	45.1	166	43.4	159
No	41.7	70	43.5	73
Toilet facility				
Own flush	45.2	104	41.5	95
Shared flush	43.0	40	53.8	50
Pit (closed or open)	43.7	38	44.2	38
No facility	41.2	47	39.1	45
Source of drinking water				
Piped into dwelling	43.4	62	46.4	65
Public tap	50.6	40	41.8	33
Well	39.7	91	41.5	95
Unprotected sources	49.3	36	47.3	35
TOTAL	44.0	237	43.6	234

*The N for some variables is lower than the total N because of the exclusion of cases with no information on such variables.

LPP and non-LPP areas have similar levels of ARI prevalence and treatment. While ARI is more prevalent among children sleeping with more than three persons sleeping in a room, the reverse pattern is observed with ARI treatment. As expected, wanted children are less likely to get sick with ARI; and among those with ARI, wanted children are more likely to be treated compared to their unwanted counterparts.

Vitamin A and iron supplementation do not show any marked variation in ARI prevalence. Somewhat surprisingly, children breastfed are more likely to have ARI than those not breastfed. Infants given supplementary foods at 6 months or over show the highest ARI prevalence. Children brought to a health facility in the last 12 months, and those with mothers reading a newspaper once a week, listening to the radio everyday, and watching TV once a week, have higher ARI prevalence compared to their respective counterparts.

Table 4 shows an overall diarrhea prevalence rate of 7.5%. The percentage of children who have had diarrhea two weeks prior to interview is higher at 6-11 months (14.0%) than for other age groups. This may be due to the fact that these are the ages when supplementary foods are first introduced to infants and the protective effects of exclusive breastfeeding can decline. Half of all children with diarrhea at these ages are taken to a health facility (Table 5).

There are no differences in diarrhea prevalence between boys and girls. The youngest group of mothers (15-19 years old) has a greater percentage of children sick with diarrhea.

There are slight variations in the prevalence of diarrhea by place of residence (urban has somewhat lower levels than rural) and region. The Visayas region has the highest prevalence (9.1%) while the NCR has the lowest prevalence rate (only 5.8%). As was the case with ARI, diarrhea prevalence is higher among children born to mothers with less education, who are younger (15-19 years old) and who are currently working. Moreover, diarrhea is more common among the poorest 20% of households and consistently declines among higher wealth status categories.

Table 5 shows that of the total number of children with diarrhea, 44.0% are taken to a health facility and 43.6% receive oral rehydration salts (ORESOL). Children 6-11 and 36-47 months of age are the most likely to be treated and older children suffering from diarrhea are the most likely to be administered with ORESOL. There is no apparent gender bias in health facility utilization for diarrhea treatment, but girls are slightly more likely to be treated with ORESOL than boys (46.5% as against 41.2%). While the percentage of children treated for diarrheal disease decreases with birth order, there is no clear pattern for ORESOL administration. Children of mothers aged 20-29 years of age are most likely to bring their sick child with diarrhea to a health facility or to administer ORESOL.

In general, treatment of diarrhea is higher in urban areas, particularly in the NCR. Furthermore, the chances of being taken to a health facility increases among wealthier households (39.8% of children from the poorest 20% of households are treated in health facilities compared to 45.5% among the richest 20%). On the other hand, the poorest 20% of households are more likely to have children administered with ORS when compared with the richest 20% of households (47.3% as opposed to 37.7%). This pattern may reflect efforts to promote greater ORS use in poorer households and preference for more expensive medical treatments in more advantaged households.

Immunization

Vaccination coverage rates for BCG, DPT3, polio3, and measles are 90.7%, 81.8%, 82.9%, and 82.7%, respectively, for children 12 months and above (Tables 6 and 7). No gender bias appears to exist for the four immunizations under consideration. Younger mothers are the most disadvantaged in terms of immunization coverage. In addition, a consistently decreasing immunization rate is observed at higher birth orders. With regard to place of residence, a higher percentage of children are immunized in urban areas compared to rural areas. The NCR has the highest coverage rate for all immunizations while Mindanao has the lowest level.

Coverage rates increase with higher educational levels of the mother. However, there is no marked difference in immunization coverage by mother's work status, residence in an LPP area, and by whether the child is wanted. Among households, the poorest 20% show the lowest coverage rates while the richest 20% have the highest.

Table 6. BCG and DPT3 Immunization of Children 12 Months Old and above by Socioeconomic and Demographic Characteristics, Philippines 1998

Background characteristic	BCG	N*	DPT3	N*
Age of child				
12-23 months	90.8	1343	81.4	1202
24-35 months	91.4	1310	83.9	1201
36-47 months	89.5	1264	79.3	1116
48-59 months	91.0	1289	82.7	1170
Sex of child				
Male	90.3	2706	81.5	2437
Female	91.1	2500	82.2	2252
Birth order				
1	95.3	1386	87.2	1265
2-3	92.8	1998	84.9	1828
4-5	89.6	1067	79.7	946
6 +	80.1	754	69.2	649
Place of residence				
Urban	95.3	2518	87.2	2302
Rural	86.7	2688	77.2	2387
Region				
Luzon	90.8	2087	80.7	1847
Visayas	93.0	1148	85.0	1052
Mindanao	84.4	1191	76.1	1066
NCR	96.9	779	90.2	724
Mother's education				
No education	42.2	57	31.9	43
Elementary	85.0	1663	71.9	1403
High school	94.8	2113	87.3	1941
College and higher	96.7	1373	91.6	1301
Age of mother				
15-19	84.9	79	61.3	57
20-29	91.8	2415	82.9	2174
30-39	90.7	2274	82.4	2063
40 +	85.9	438	77.3	394
Mother's work status				
Currently working	90.7	2128	82.4	1928
Not working	90.6	3073	81.5	2759
Wealth index				
Poorest 20%	81.3	636	70.1	546
20-40%	82.4	1157	71.0	997
40-60%	94.2	1323	85.3	1193
60-80%	97.0	1112	89.1	1019
Richest 20%	97.3	874	93.0	833
LPP area				
LPP	90.9	3582	81.2	3196
Non-LPP	90.1	1624	83.1	1493
Child wanted				
Yes	91.1	2904	82.9	2638
No	90.3	2300	80.6	2049
Visited a health facility in last 12 months				
Yes	93.8	3553	85.4	3231
No	84.6	1651	74.8	1455
Reads news once a week				
Yes	94.6	2814	86.8	2579
No	86.4	2386	76.4	2104
Listens to radio everyday				
Yes	92.0	3943	83.7	3578
No	86.8	1258	76.5	1108
Watches TV once a week				
Yes	94.6	3753	86.4	3424
No	81.8	1428	71.3	1242
TOTAL	90.7	5206	81.8	4689

*The N for some variables is lower than the total N because of the exclusion of cases with no information on such variables.

Table 7. Polio3 and Measles Immunization of Children 12 Months Old and above by Socioeconomic and Demographic Characteristics, Philippines 1998

Background characteristic	POLIO3	N*	MEASLES	N*
Age of child				
12-23 months	82.3	1216	79.2	1170
24-35 months	84.6	1211	82.8	1183
36-47 months	80.4	1134	83.0	1170
48-59 months	84.3	1192	86.1	1219
Sex of child				
Male	82.7	2478	82.5	2469
Female	83.0	2274	83.0	2273
Birth order				
1	87.9	1276	87.9	1276
2-3	85.6	1843	85.2	1833
4-5	81.2	965	80.2	954
6 +	70.9	668	72.2	679
Place of residence				
Urban	88.0	2319	87.2	2297
Rural	78.5	2432	78.9	2445
Region				
Luzon	82.0	1880	82.2	1885
Visayas	86.3	1066	86.2	1064
Mindanao	77.2	1082	76.8	1078
NCR	90.3	724	89.2	715
Mother's education				
No education	34.6	47	35.6	48
Elementary	74.1	1445	74.8	1461
High school	88.1	1963	86.8	1935
College and higher	91.3	1297	91.7	1298
Age of mother				
15-19	64.5	60	72.8	67
20-29	83.6	2196	83.3	2190
30-39	83.8	2097	83.4	2087
40 +	78.0	398	77.8	397
Mother's work status				
Currently working	83.8	1961	84.0	1966
Not working	82.3	2790	81.8	2772
Wealth index				
Poorest 20%	71.2	555	72.4	564
20-40%	72.2	1014	73.2	1028
40-60%	87.1	1219	84.2	1181
60-80%	89.6	1026	91.1	1041
Richest 20%	93.1	834	93.0	832
LPP area				
LPP	82.3	3240	82.6	3246
Non-LPP	84.1	1512	83.1	1496
Child wanted				
Yes	83.6	2665	83.5	2659
No	82.1	2085	81.9	2081
Visited a health facility in last 12 months				
Yes	86.7	3282	85.9	3248
No	75.4	1467	76.6	1492
Reads news once a week				
Yes	87.8	2611	87.6	2603
No	77.5	2136	77.5	2133
Listens to radio everyday				
Yes	84.6	3622	84.5	3618
No	77.9	1126	77.5	1120
Watches TV once a week				
Yes	87.6	3469	87.2	3454
No	72.2	1259	72.6	1266
TOTAL	82.9	4752	82.7	4742

*The N for some variables is lower than the total N because of the exclusion of cases with no information on such variables.

Table 8. Supplementation with Vitamin A, Iron and Iodine by Socioeconomic and Demographic Characteristics, Philippines 1998

Background characteristic	Vitamin A	N*	Iron	N*	Iodine	N*
Age of child						
Under 6 months	28.6	227	24.2	191	14.9	118
6-11 months	55.9	408	47.0	343	37.6	274
12-23 months	78.7	1151	61.8	904	58.9	859
24-35 months	81.6	1160	64.0	908	62.7	886
36-47 months	78.8	1099	62.3	867	62.9	876
48-59 months	78.4	1098	63.9	892	63.2	881
Sex of child						
Male	71.3	2689	56.6	2131	54.8	2056
Female	71.5	2455	57.6	1973	53.7	1838
Birth order						
1	71.8	1308	60.5	1103	55.6	1008
2-3	73.3	2009	59.8	1633	56.4	1537
4-5	71.9	1057	55.8	820	53.6	786
6 +	65.6	769	47.0	548	48.1	562
Place of residence						
Urban	74.1	2448	64.6	2131	58.7	1929
Rural	69.1	2695	50.8	1974	50.5	1965
Region						
Luzon	71.2	2085	59.7	1746	56.2	1640
Visayas	73.4	1139	49.9	773	51.3	795
Mindanao	67.9	1180	52.2	903	49.5	854
NCR	75.1	740	69.1	683	61.7	605
Mother's education						
No education	31.1	51	18.3	30	18.9	31
Elementary	68.1	1625	46.2	1101	45.9	1094
High school	75.5	2129	62.8	1765	59.9	1683
College and higher	73.0	1339	66.0	1209	59.8	1087
Age of mother						
15-19	46.1	88	33.0	63	30.5	58
20-29	72.6	2484	57.3	1957	53.9	1836
30-39	72.3	2174	58.6	1761	56.7	1701
40 +	68.2	398	55.8	324	51.3	299
Mother's work status						
Currently working	74.5	2033	60.2	1641	59.3	1612
Not working	69.5	3110	55.2	2463	51.2	2282
Wealth index						
Poorest 20%	64.1	624	42.3	410	45.0	437
20-40%	66.3	1169	45.5	800	45.4	798
40-60%	75.4	1320	62.0	1082	59.5	1037
60-80%	76.8	1107	66.0	952	62.1	890
Richest 20%	72.6	811	70.0	779	59.2	656
LPP area						
LPP	71.9	3568	55.9	2767	53.7	2654
Non-LPP	70.3	1576	59.8	1337	55.6	1240
Child wanted						
Yes	71.6	2795	58.0	2257	54.7	2128
No	71.2	2348	56.1	1847	53.7	1766
Visited a health facility in last 12 months						
Yes	73.3	3644	58.6	2908	55.4	2748
No	67.2	1498	53.8	1195	51.7	1145
Reads news once a week						
Yes	74.0	2778	63.6	2385	59.0	2203
No	68.6	2361	50.0	1718	49.2	1689
Listens to radio everyday						
Yes	72.7	3908	59.4	3185	56.0	2996
No	67.7	1233	50.4	917	49.2	895
Watches TV once a week						
Yes	74.7	3703	63.9	3164	59.4	2931
No	64.2	1419	41.8	923	43.0	950
TOTAL	71.4	5143	57.1	4104	54.3	3894

*The N for some variables is lower than the total N because of the exclusion of cases with no information on such variables.

A higher level of child immunization coverage is observed with mothers who visited a health facility in the last 12 months than with mothers who did not visit a health facility. Children of mothers who are more exposed to media (newspaper, radio, and TV) are more likely to exhibit higher levels of immunization than their counterparts with less media exposure.

Vitamin and Mineral Supplementation

Table 8 shows that most children in the 12-59 month age group are given vitamin A, iron, and iodine supple-ments. Children born to younger mothers are less likely to receive supplementation as well as higher birth order offspring. However, as was the case with immunization, there is no evidence of pronounced gender differentials in vitamin/mineral supplementation.

Children who live in urban areas and who reside in the NCR have the highest supplementation rates. Furthermore, younger mothers, mothers with less education, and mothers who are not working have the lowest rates of child supplementation. The level of supplementation with Vitamin A, iron, and iodine tends to increase with improved household wealth status.

Multivariate Analysis

Self-Reporting of ARI and Diarrheal Disease in the Philippines

Findings presented in Table 9 indicate that older children are less likely to be afflicted with ARI and diarrhea. As bivariate relationships in Tables 3 and 4 clearly show, this association is far from linear. Risks tend to be elevated for infants aged 6-11 months and children aged 12-23 months, but substantially lower for children between 24-59 months of age. When controlling for the effect of other predictors, the birth order of the child is not an important determinant of ARI and diarrhea susceptibility.

The sex of the child is also not an important factor predicting ARI and diarrhea prevalence. This result is consistent with the findings of Costello et al. (1994) that report no significant gender effects in accounting for patterns of child morbidity in the Philippines. The child being wanted by the parent proves to be a significant variable affecting diarrheal incidence (wanted children are 23% less likely to have diarrhea). Whether children are wanted at the time of birth, later, or not at all does not appear to be related to parental preferences for boy or girl offspring.

Somewhat surprisingly, there are no significant differences between urban and rural areas in the prevalence of ARI and diarrheal disease. However, odds ratios show that children from Visayas and Mindanao are less likely to suffer from ARI than children residing in Metro Manila (NCR). The odds of acquiring ARI are 41% lower in Visayas and 43% lower in Mindanao compared to Metro Manila. This result may likely stem from the high level of air pollution in Metro Manila. There are no significant regional variations in the self-reporting of diarrhea. However, residence in an LPP province makes a child more susceptible to having diarrhea. This may be partly explained by the fact that LPP provinces are more likely to be economically disadvantaged areas.

Introduction of solid food is usually recommended from age four months onwards to supplement the nutritional needs of children. Results show that children who are introduced with supplementary foods at three months of age are twice as likely to have diarrhea while children given supplementary feeding at six months of age are more likely to contract ARI. This may be due to unhygienic food preparation that makes the child more vulnerable to infections and diseases. Also, eliminating the protective effects of exclusive breastfeeding likely makes the acquisitions of infections more likely.

A statistically significant association between incidence of diarrhea and mother's work status is borne out by the data. Children whose mothers are currently working are more likely to have diarrhea than mothers who are not working. Although being employed may translate to better economic and health conditions, children whose mothers are working are usually left to the care of another sibling or housemaid and thus may not be well looked after.

Incidences of ARI and diarrhea do not seem to be affected by other measures of socioeconomic status. For example, the household wealth status of households (measured through the wealth index) is not an important predictor of ARI and diarrhea prevalence.

Table 9. Odds Ratios of Selected Variables on Incidence and Treatment of ARI and Diarrhea among Children below Five Years Old, Philippines 1998

Variable	Prevalence		Treatment	
	ARI	Diarrhea	ARI	Diarrhea (w/ ORS)
Urban residence	0.85	0.95	0.87	1.04
Region				
Luzon	0.76	0.75	0.61	0.82
Visayas	0.59*	0.84	0.56	0.90
Mindanao	0.57*	0.74	0.60	0.85
LPP coverage	1.11	1.40*	1.34	0.94
Age of child (mos.)	0.99*	0.97*	0.99*	1.00
Sex	1.02	1.13	1.22	0.78
Birth order	1.03	0.99	1.00	0.91
Wantedness	0.87	0.77*	1.48*	0.95
Age of mother	0.99	0.99	0.97	1.02
Education	0.97*	0.99	1.00	1.00
Mother's work status	1.16	1.38*	0.76	1.20
Vitamin A supplementation	1.17	1.18	-	-
Iron supplementation	0.98	1.09	-	-
Breastfeeding duration (mos.)	1.00	1.00	-	-
Age supplemental foods introduced				
0-2 months	1.05	1.27	-	-
3-5 months	1.21	1.91*	-	-
6+ months	1.53*	2.00*	-	-
Visited health facility in last 12 mos.	-	-	1.97*	1.37
Reads newspaper at least once a week	-	-	1.22	1.26
Listens to radio everyday	-	-	1.24	1.14
Watches TV at least once a week	-	-	1.29	0.88
Wealth index				
Poorest 20%	1.04	1.25	0.61	3.94*
20-40%	1.08	1.44	0.41*	1.52
40-60%	1.12	1.27	0.59*	1.53
60-80%	0.99	1.15	0.76	1.45
Toilet facilities				
Own flush	-	0.83	-	1.81
Shared flush	-	0.93	-	3.07*
Pit (closed or open)	-	0.83	-	1.25
Source of drinking water				
Piped into dwelling/ yard	-	1.02	-	1.11
Public tap	-	1.13	-	0.92
Well	-	1.02	-	0.91
No. of HH members sleeping/room	1.01	1.00	1.00	1.03

* p <= .05

Table 10. Odds Ratios of Selected Variables on Immunization of Children Twelve Months Old and Above, Philippines 1998

Variable	BCG	DPT3	Polio3	Measles
Urban residence	1.10	0.92	0.91	0.86
Region				
Luzon	0.55*	0.76	0.85	0.84
Visayas	0.88	1.35	1.54*	1.41
Mindanao	0.49*	0.85	0.95	0.85
LPP coverage	1.87*	1.15	1.11	1.27*
Age of child (mos.)	1.00	1.00	1.00	1.01*
Sex	0.90	0.95	0.99	0.97
Birth order	0.80*	0.85*	0.84*	0.87*
Wantedness	0.88	1.00	0.96	0.95
Age of mother	1.06*	1.05*	1.05*	1.04*
Education	1.13*	1.12*	1.10*	1.11*
Mother's work status	0.85	0.88	0.94	0.98
Visited a health facility in last 12 mos.	2.33*	1.82*	1.95*	1.70*
Reads newspaper at least once a week	0.96	0.94	0.99	1.04
Listens to radio everyday	1.14	1.20*	1.16	1.17
Watches TV at least once a week	1.22	1.08	1.13	1.09
Wealth index				
Poorest 20%	0.25*	0.35*	0.36*	.33*
20-40%	0.44*	0.48*	0.47*	0.50*
40-60%	0.49*	0.54*	0.59*	0.48*
60-80%	0.71	0.74*	0.89	.74*

* p< = 0.05

Table 11. Odds Ratios of Selected Variables on Supplementation of Children below Five Years Old, Philippines 1998

Variable	Vitamin A	Iron	Iodine
Urban residence	0.91	1.05	0.93
Region			
Luzon	0.77*	0.79*	0.84
Visayas	0.91	0.56*	0.73*
Mindanao	0.74*	0.69*	0.73*
LPP coverage	1.31*	1.33*	1.25*
Age of child (mos.)	1.04*	1.02*	1.03*
Sex	1.01	0.95	1.04
Birth order	0.98	0.96*	1.00
Wantedness	0.88*	0.96	0.94
Age of mother	1.00	1.02*	1.00
Education	1.06*	1.06*	1.07*
Mother's work status	1.05	0.96	1.14
Visited a health facility in last 12 mos.	1.51*	1.27*	1.25*
Reads newspaper at least once a week	0.98	1.09	1.04
Listens to radio everyday	1.11	1.25*	1.13*
Watches TV at least once a week	1.18*	1.40*	1.30*
Wealth index			
Poorest 20%	0.70*	0.54*	0.65*
20-40%	0.98	0.76*	1.05
40-60%	1.15	0.92	1.11
60-80%	1.14	0.90	1.15

* p <= 0.05

Somewhat surprisingly, environmental sanitation variables such as the presence of toilet facilities and source of drinking water are not significantly associated with contracting diarrhea. In addition, the number of household members sleeping per room does not increase the risk of acquiring ARI. These unexpected findings suggest that the occurrence of ARI and diarrhea in the general population may be somewhat more random than suggested by theoretical expectation.

Child Morbidity Treatment Patterns

Results in Table 9 show that urban residence and region are not important predictors for the treatment of ARI and diarrhea. Residing in an LPP province also does not significantly affect treatment levels for these diseases.

Younger children are more likely to be given treatment for ARI. This may be due to the fact that younger children are more prone to illnesses and therefore require additional care and attention. As was the case with disease prevalence, the sex of the child is not an important predictor of ARI and diarrhea treatment. Meanwhile, children who are wanted by their parents are 48% more likely to be treated for ARI.

Children whose mothers visited a health facility in the last 12 months are twice as likely to bring their children to a health facility for treatment. This may reflect the positive impact of health education and services offered by existing health facilities. No link can be discerned between the treatment of children for diarrhea and mother's visit to a health facility, which suggests that diarrhea treatment patterns may be more home-based than care for ARI infections.

With regard to the economic status of the household, the poorest 20% are four times as likely to treat diarrhea with ORS than the richest 20% of households. It appears that ORS, a very effective yet less costly treatment for diarrhea, is not highly patronized by more economically advantaged households. This may be due to the unwarranted assumption that ORESOL is a second-rate therapeutic technique suitable only for poorer families (Costello, et al. 1994:99).

Immunization of Children

Table 10 presents odds ratios accounting for immunization coverage for BCG, DPT3, Polio3 and measles. Childhood immunization coverage is reasonably uniform in most areas of the Philippines. For example, there are no significant differences in immunization coverage by urban/rural status. Regional variations in coverage are also not marked. Children in areas of Luzon outside Metro Manila and Mindanao are less likely to receive BCG compared to NCR (the odds decline by 45% and 51% respectively) while children in Visayas are more likely to receive the third dose of polio vaccine than children in NCR. BCG and measles immunization coverage is higher in LPP provinces, but DPT3 and Polio3 coverage is no better in LPP than non-LPP areas.

Older children are more likely to be immunized for measles. This is consistent with the fact that measles injections are usually administered to children at nine months and above. Birth order proves to have a significant relationship for each of the four vaccines under consideration, with children from lower birth orders being more likely to be immunized. The sex of the child is not a significant factor affecting immunization coverage, which again implies no gender discrimination in this instance.

Immunizations for all four vaccines are more likely to be administered to children with older and more educated mothers. This is to be expected since these mothers probably have more knowledge concerning proper health care practices. Similarly, mothers who visited a health facility are more likely to have their children immunized. Mothers who listen to radio everyday are also more likely to have their children immunized with DPT3.

Lastly, children who belong to poorer households are less likely to be immunized for all four vaccines compared with the richest 20% of households. The poorest 20% of households are particularly disadvantaged in terms of immunization coverage. Compared to the richest 20% of households, the poorest 20% are 75% less likely to have their children immunized against BCG. In addition, children in the poorest

households are 65% less likely to have received DPT3, 64% less likely to have Polio3, and 67% less likely to have measles vaccinations. New strategies to improve immunization coverage among the poorest households in the Philippines are clearly an urgent need.

Supplementation with Vitamin A, Iron and Iodine

Table 11 shows that children in Luzon are less likely to be given vitamin A and iron supplementation than children in the NCR. Children living in the Visayas are less likely to be given iron and iodine and children in Mindanao are less likely to be given any of the three supplementations compared with children in NCR. This may be due to the fact that Manila, being the capital city, is where most health facilities and services are concentrated.

LPP coverage proves to be a statistically significant factor affecting all three supplementations. Children in LPP areas are more likely to receive supplementation than those in non-LPP areas. This may be explained by the fact that the LPP program includes expanded maternal and child health services, among other interventions, in its program package.

Another significant factor predicting the likelihood of supplementation is the age of the child. Odds ratios show that the older the child, the more likely he/she will be to receive all three supplements. Birth order, treated as a continuous variable, has a negative association with iron supplementation. The higher the birth order, the less likely a child is to receive iron supplementation. Older women are also more likely to provide iron supplementation for their child.

Mothers with higher levels of educational attainment are more likely to obtain all three supplements listed in Table 11. It is probable that more educated mothers have greater awareness of the importance of vitamin A, iron, and iodine supplementation for promoting maternal and child health practices.

The likelihood that a child would be given each of the three supplementations if the mother visited a health facility in the last twelve months is borne out by the data. This again reflects the positive impact of health facilities, perhaps in terms of educating women on proper health and nutrition.

Among the variables on exposure to mass media, radio listening is a significant factor affecting iron and iodine supplementation, while TV promotes greater utilization of all three supplements. Reading newspapers is not an important media channel affecting supplementation since a relatively small percentage of the population utilizes this form of print media.

With regard to the household wealth index, results show that the poorest 20% of households are less likely to receive all three supplementations, while the poorest 20 to 40% are less likely to be given iron supplementation compared to the richest 20% of households. This is indicative of a situation in which those who are economically disadvantaged are less likely to utilize health services.

Conclusions and Recommendations

In all multivariate models, the sex of the child is not a significant determinant. This is an important finding in that there is no evidence of gender bias in terms of major childhood disease incidence and treatment patterns. This result is consistent with the findings of Costello et al. (1994).

Children in Visayas and Mindanao are less likely to contract ARI compared to children in Metro Manila. This does not come as a surprise but rather as confirmation of the deteriorating air quality in Metro Manila. But once a child falls ill with ARI, the region where the child lives is not a significant factor affecting ARI treatment, implying that care is not compromised if he/she comes from a less developed region. However, for vitamin and mineral supplementation, results show that some regions outside Metro Manila are less likely to receive vitamin A, iron, iodine supplementation, and immunization for BCG.

Results also show that visiting a health facility in the last twelve months is a significant factor affecting a mother's choice to have her child treated for ARI, obtain immunization, and be given nutritional supplementation. The fact that it is usually eco-

nomically disadvantaged households that are most likely not to benefit from nutritional supplementation and immunization points to the need for more affordable clinics that have good facilities. Thus, the provision of additional clinics, especially in far-flung areas, could dramatically improve child morbidity conditions.

Older women are better off in terms of availing of iron supplementation and immunization for their children. This implies that more program services are needed to reach out to younger mothers. Such efforts are essential for improving knowledge about reproductive and child health care among young adult women.

In terms of programmatic issues, the Local Government Unit (LGU) Performance Program (LPP) has a significant impact on nutrient supplementation and immunization for BCG and measles. This may reflect efforts to more effectively direct program services to target clients in terms of improved health services. Nevertheless, more efforts could still be made by the program for treatment of ARI, diarrhea and immunization for DPT3 and Polio3.

The poorest 20% of households are underserved in terms of nutrient supplementation and immunization. In this sense, it may be said that continued efforts by the EPI and the DOH to provide more services to this group are still needed.

NOTE

This integrated report is part of the secondary analysis project for the 1998 National Demographic and Health Survey. Separate reports on the determinants of infant/child mortality and morbidity were completed by Ms. Alcantara and Ms. Rodriquez at the UP Population Institute (UPPI). Dr. Cabigon is Director of UPPI. She served as the adviser for the project. The authors wish to acknowledge the technical assistance provided by Dr. Andrew Kantner, consultant for Macro International.

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UTILIZATION OF MATERNAL HEALTH SERVICES IN THE PHILIPPINES

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EXECUTIVE SUMMARY

This study undertakes an analysis of levels and trends in the utilization of prenatal, delivery and postnatal services among women of reproductive age (15-49) using information collected from two nationally representative surveys, the 1993 National Demographic Survey (NDS) and the 1998 National Demographic and Health Survey (NDHS).

Prenatal Care

In 1998, 92% of all women obtained prenatal care in the Philippines. Most Filipino women are complying with the internationally recommended number of prenatal visits. In 1998, women had an average of 5.5 prenatal visits. Most women initiate their prenatal visits during the first trimester. However, major disparities are still evident by educational status, household wealth status, urban and rural status, and residency in Metro Manila compared to other regions.

Tetanus toxoid coverage among pregnant women has decreased by about 10% between 1993 and 1998, while iodine and iron supplementation during the nine-month prenatal period has increased. However, women are not well informed about dangerous symptoms during pregnancy and surprisingly few obtain pap smears and breast examinations.

Multivariate analyses affirms that higher education and wealth status are strong predictors of the utilization of prenatal care as well as availing of maternal services such as iodine supplementation and acquiring information about danger signs of pregnancy. Other factors that increase the likelihood of obtaining prenatal care include age, residence in Mindanao and Visayas, Islamic religious status, being employed, and longer preceding birth intervals.

As for the choice of prenatal care provider, midwives and nurses appear to be the most popular providers of prenatal care, followed by doctors, and traditional birth attendants (or hilots). Hilots appear to be gaining in popularity since the percentage of women obtaining prenatal care from hilots in 1998 was nearly similar to levels reported for doctors. This enhanced popularity may reflect improvements in hilot competence (through provider skill training). It may also raise questions concerning the abilities of traditional birth attendants to provide high quality prenatal care to a large client base.

Delivery Services

Of the 7,566 births that were studied in the 1998 survey, traditional birth attendants (TBAs) assisted most deliveries (41.3%), while doctors and nurse/midwives attended 30.9% and 25.5% of all deliveries, respectively. TBAs also assisted more than half of all home deliveries (65.5). First births are more likely to have modern medical support (doctors and nurse/midwives) at delivery while TBAs are more likely to attend succeeding births. Higher order births are more likely to be delivered at home. Contrary to popular notions, results

show that higher order pregnancies are more likely to be free of delivery complications and also have a higher likelihood of being born alive than lower parity births.

Study results highlight the persistent inequities in the Philippine health care system. Women residing in the poorest 20% of households are less likely to consult a doctor. They also have a greater likelihood of being assisted by a TBA during delivery and having their children at home. Poorer women with less education and women residing in rural areas also tend to be marginalized when it comes to maternal health care. Since all pregnancies carry latent risk, these women are at a disadvantage when complications arise during delivery. Clearly, women who most need health care often do not have easy access to essential reproductive health services.

Postnatal Care

Postnatal coverage has declined in the Philippines between 1993 and 1998. The percentage of mothers obtaining postnatal care fell from 70.9% in 1993 to 58.8% in 1998. Many mothers who sought postnatal care comply with the recommendation of the World Health Organization (WHO) Program on Safe Motherhood pertaining to the timing of first postnatal visit. Slightly less than half (43.1%) of Filipino mothers who obtained postnatal care consulted a health worker less than a week after delivery. Results also show that higher educational attainment is associated with increased utilization of postnatal care as well as the choice of a professional medical care provider. Mindanao has the highest level of postpartum care, which is typified by hilot service provision to Muslim mothers.

Findings suggest that the utilization of postnatal care is not just a function of the individual attributes of the mother, but is also related to the use of other maternal health services. The choice of postnatal care provider is highly correlated with the place of delivery. Home delivery in particular is strongly associated with reliance on hilots for postnatal care.

Recommendations

- Policies and programs initiated by government and non-government organizations should continue to give priority to the under-served population, particularly less educated and poorer women. Inequities may be addressed by making quality health services accessible to under-served areas and provide some form of health insurance for essential services. Since local governments are the health providers, it is critical that their management abilities be strengthened.
- There is need to improve awareness of health programs and services by the public health sector. Health promotion as measured by three media variables seems ineffective. Reinforcement through other social mobilization strategies is essential. Also, health provider-client information exchange is another factor that needs improvement. Agencies responsible for IEC (information, education, communication) development should evaluate the needs of target groups in order to get essential messages across.

There is a decline in the utilization of postnatal care from 1993 to 1998. The use of postnatal care services is not merely a function of the mother's socio-demographic characteristics, but most importantly, of the maternal health care received during the prenatal period and at delivery. Similarly, the choice of provider for prenatal and delivery care influences women in their choice of postnatal care provider.

Recommendations

- Addressing postnatal care requires an approach that will integrate policies and interventions that strengthen the maternal health services starting from prenatal, to delivery, and postnatal care. Reiterating plans for postnatal care during the prenatal visit will enhance postnatal care not only as a promotive, preventive and curative intervention, but also as a life saving strategy.
- Local governments should advocate that primary and secondary health facilities should be equipped with services not only for prenatal care but also for delivery and postpartum care and they should be accessible and affordable to their clientele.
- Prenatal care services should promote the utilization of preventive services such as tetanus

toxoid vaccine, iron and iodine supplementation, but also provide women with valuable information about danger signs and symptoms during pregnancy and possible complication during and after delivery. Moreover, pap smears and breast exams should be an essential part of the services that women utilize during the prenatal period. These interventions should also be tied to a functioning referral system in case complications occur during delivery and the postpartum period.

- The delivery of maternal health care services should be expanded to include other elements of reproductive health, particularly family planning, prevention and control of reproductive tract infections (RTI) including STDs/HIV/AIDS, as well as counseling and education pertaining to human sexuality and reproductive health. Areas requiring particular attention include services for adolescents, male involvement in reproductive health programs, and violence against women.

TBAs are popular providers of maternal health care services, particularly during delivery and postnatal phases. Although nurse/midwives were popular providers of prenatal care, women were increasingly seeking the services of TBAs in 1998 compared to 1993. However, it is not clear how effective TBAs are in providing high quality maternal services. Health authorities have been uncertain about the significant contribution of TBA training for the reduction of maternal mortality and morbidity. However, since the demand for TBA services will likely continue to rise, further efforts will be needed to strengthen their capacities.

Recommendations

- In the past decade, less attention has been given to strengthening the skills of TBAs. Although there have been efforts to train TBAs in the past, particularly in the 1980s, there have been no comprehensive studies that reviewed the technical competence, skills and impact of TBA training in the Philippines. A study should be designed to shed light on the current status of TBAs in the Philippines and their roles in the health care system. Furthermore, findings call for further studies that explore women's preference for hilots as maternal care providers. A qualitative inquiry may offer new insights relevant to the contextual and cultural aspects of maternal health care that may lead to the enhancement of service delivery in the Philippines.
- The government and concerned agencies should focus on straightening the skills and technical competence of midwives in providing health services, including reproductive health.
- The DOH has recognized the importance of TBAs in assisting normal deliveries since there is a dearth of trained midwives to meet the maternal health care needs of women across the country. However, the role of TBAs is not clearly defined and assigned in the referral system of public health services. There is therefore a need to design referral systems that more effectively recognize the roles of TBAs.

It is important that skilled attendants attend to deliveries owing to the fact that a considerable portion of the population experience delivery complications. Among skilled maternal care providers, the midwives have the greatest capacity to assist the majority of births since the midwife-client ratio (1:5000) is much lower than that of doctors (1:20,000). Moreover, midwives usually live in their catchment areas and thus are geographically accessible to the community. However, it is rather disturbing to note that the midwives' share in the provision of delivery services is not large, and has also been decreasing between 1993 and 1998. Although midwives were the preferred prenatal attendants, they were the least preferred for delivery compared to doctors and TBAs.

Recommendations

- There is a need to closely examine midwives' roles in maternal health services, particularly their considerable decline in birth attendance. This calls for qualitative research that looks into the task and responsibilities of the midwife

as a multiple/all-around health provider. This, too, may imply that the midwife could be overburdened health provider who does not only conduct health promotion but is also a provider of other preventive and curative services. The midwife is also tasked with record-keeping and report preparation that often consumes a lot of her time.

- Mechanisms (programmatic) may be developed to reduce the midwives' responsibilities so that she can assume a more significant role in pregnancy/prenatal, natal and postnatal care.
- There are current initiatives to develop the entrepreneurial skills of midwives by assisting them to set up private clinics where clients could avail of their services for a fee. In the light of these initiatives, it is important to examine its effects on the prenatal, natal and postnatal care. It may be worth considering the effects of their entrepreneurial role in the pregnancy management, particularly among the marginalized women.

The period 1993 to 1998 were the initial years when the health system was devolved to the Local Government Units (LGUs). Fewer resources could have been allocated to frontline health workers (particularly the midwives) in undertaking outreach work, especially in hard-to-reach areas. Consequently, they are less accessible to marginalized women. The latter could turn to those that are geographically and culturally accessible health provider, who often than not, are the TBAs.

Recommendation

- There is a need to assess the effects of devolution in the utilization and delivery of maternal health services. Furthermore, it is important to examine in retrospect, the perceptions of midwives and other allopathic health providers regarding how this structural and social change has affected their roles especially in the provision of quality care to expectant mothers before, during and after delivery.

Introduction

Reproductive health as defined at the 1994 International Conference on Population and Development (ICPD) in Cairo underscores the importance of upholding a woman's right to appropriate health care that provides safe passage through pregnancy and childbirth. It stresses the importance of ante-natal, safe delivery and postnatal services. Globally, at least 585,000 women die each year from complications of pregnancy and childbirth (WHO 1997). Of these deaths, more than 70% are due to complications such as hemorrhage, infection, unsafe abortion, hypertensive disorders, and obstructed labor.

Almost 90% of all maternal deaths occur in sub-Saharan Africa and Asia, indicating a wide disparity in human development between developed and developing countries. The likelihood of women dying from pregnancy-related causes in Northern Europe is 1 in 4,000 while for women in Africa the chance is 1 in 16. According to the World Health Organization (1997), women from developed countries are more likely to receive antenatal care (97%) than women from developing countries (65%). In addition, a much higher percentage of women from third world countries are not assisted by trained attendants during childbirth or provided with postnatal care. While 90% of postpartum women in developed countries receive care, only 30% obtain care after childbirth in developing countries.

In the Philippines, there are approximately 200 maternal deaths per 100,000 live births (NDHS 1998). Deaths are mainly due to hemorrhage, hypertensive complications, sepsis and complications from abortion. Maternal mortality accounts for approximately 14% of all deaths to women aged 15-49.

In an effort to reduce maternal morbidity and mortality rates, global interventions are underway. Of greatest note is the World Health Organization's Safe Motherhood Initiative launched in Nairobi in 1987. This program seeks to make family planning and maternal health services more effective by improving quality, increasing access and educating the public about the importance of such services and how they can be best obtained.

In the Philippines, the Department of Health (DOH) has initiated the Philippine Reproductive Health Program that incorporates both maternal and child health components. The program has adopted a life cycle approach and is cognizant of the reproductive health needs of individuals from infancy to old age (DOH Primer 1999). The program envisions that Filipino couples should be enjoying high quality reproductive health care by the year 2010. Interventions emphasize the health assessment, diagnosis and treatment of pregnant women in order to avoid complications of pregnancy and childbirth (Nisca, Z. et al. 1995).

With the devolution of health services in the Philippines, local governments are now given autonomy to directly manage health programs and resources. An important initiative for strengthening the capacity of local government units to provide high quality reproductive health services is the Local Government Performance Program (LPP). This program was launched five years ago by the Philippine Government, with the financial and technical assistance of USAID. In partnership with the DOH and local governments, the LPP is designed to strengthen the capacity of the public sector at the local level in planning and implementing reproductive health programs by means of staff training and systems development (USAID Annual Report 2000).

While health services may be available, there seems to be low utilization of maternal health services. Empirical studies have pointed to several factors influencing women's utilization of maternal health services (Addai 1998, Lamberte 1991, Miles-Doan and Brewster 1998, Obermeyer and Potter 1991, Ramos and Salazar 1994, Zablan 1996). The WHO Safe Motherhood Program (1997) reiterates the relationship between women's low utilization of available health services and the range of social, economic and cultural factors that contribute to women's health problems before, during and after childbirth.

Considering the government's recent efforts to improve maternal health care in the Philippines, it is important to evaluate current levels and trends utilizing a nationally representative sample. This study undertakes an analysis of national and regional levels and trends in the utilization of prenatal, delivery and postnatal services among women of reproductive age (15-49) using information collected from two nationally representative surveys, the 1993 National Demographic Survey (NDS) and the 1998 National Demographic and Health Survey (NDHS).

Organization of the Study

This study contains three sections. The first part examines trends and determinants of prenatal care utilization; the second part investigates factors relating to the choice of provider and place of delivery; and the third part describes utilization patterns for postpartum health services. The report ends with conclusions and recommendations for pregnancy management from the prenatal through the postpartum period.

Data and Methods

This study employs data from the 1993 Philippine National Demographic Survey and the 1998 Philippine National Demographic and Health Survey conducted by the National Statistics Office (NSO) in collaboration with Macro International's Demographic and Health Survey program. A total of 5,615 live births from the 1993 NDS and 7,540 live births from the 1998 NDHS are included. The data on prenatal, delivery and postnatal care pertain to children born alive within the five year period prior to each survey.

Bivariate analysis is employed when examining trends between 1993 and 1998 in the utilization of maternal health services. Multivariate analysis is also presented that identifies factors associated with prenatal, delivery and postnatal care. Owing to the dichotomous nature of the dependent variables utilized in this study, binary logistic regression is employed. Logistic regression estimates the odds of a particular event occurring as a function of a series of predictor (independent) variables. The odds ratio is defined as the probability of an event occurring divided by the probability of an event not occurring.

It estimates the relative amount by which the odds of an outcome increase (odds ratio greater than 1.0) or decrease (odds ratio less than 1.0) when the value of the independent variable is increased by one unit (Hosmer and Lemeshow 1989).

PART ONE:

THE UTILIZATION OF PRENATAL CARE

Prenatal care has long been recognized to be important for improving maternal health and pregnancy outcomes (The Safe Motherhood Program 1997, WHO 1992, Wong et al. 1987). It screens a predominantly healthy population in order to detect high-risk pregnancies and make appropriate referral for care. Since the launching of safe motherhood initiatives at the Nairobi Conference in 1987, greater efforts have been made to improve maternal health, particularly in developing countries.

It has been estimated that 90% of women dying due to pregnancy and childbirth complications occur in sub-Saharan Africa and Asia. Although some authorities are cautious in concluding that prenatal care can directly prevent maternal mortality and morbidity (WHO 1992, Safe Motherhood 1997), there are studies that link maternal deaths and high infant mortality rates to poor prenatal care. Some studies in the Philippines attribute maternal deaths to inadequate prenatal and postnatal care, as well as inadequate assistance during delivery (de la Paz 1986, Country Program for Children 1983-1987, Villaroman-Bautista et al. 1990).

Maternal health care studies in the Philippines have focused on various topics relating to nutrition, treatment of problems in pregnancy and childbirth, prematurity and maternal and neonatal deaths. Considering that various programs are attempting to improve prenatal care in the country, there is virtually no study that analyzes the more recent picture of prenatal care utilization using a larger population of women representing all regions in the country.

This portion of the study examines the prenatal coverage in the two surveys, including the timing of first prenatal visit. Furthermore, it investigates factors associated with the choice of prenatal care provider and the utilization of services during pregnancy.

Coverage of Prenatal Care in the Philippines

As can be seen in Table 1, high utilization of prenatal care (92.2%) is observed among Filipino women of reproductive age in 1993 and 1998. Although prenatal coverage is high, there appears to be no increase in the percentage of women who obtained prenatal coverage over the 5-year period between 1993 and 1998. It is encouraging to note that prenatal coverage in the Philippines is higher than in some neighboring Asian and other developing countries. The results also show an improvement compared to 1970 when only 83% of Filipino women obtained prenatal care (Royston & Armstrong 1989).

Table 1. Frequency and Percentage Distribution of the Utilization of Prenatal Care among Reproductive Aged Women in 1993 and 1998

	1993		1998	
	N of Cases	%	N of Cases	%
With Prenatal	8168	92.3	6959	92.2
No Prenatal	680	7.7	589	7.8
Total	8848	100	7548	100

Table 2. Mean Number of Prenatal Visits, 1993 and 1998

Maternal Characteristics	1993	1998
Age groups (3 categories)		
15–24	5.3	5.1
25–34	5.6	5.7
35 +	5.1	5.4
Birth Order		
1	6.3	6.3
2–3	5.6	5.8
4–5	4.8	4.9
6+	4.5	4.2
Educational Attainment		
No education	5.2	3.8
Incomplete primary	4.5	4.0
Complete primary	4.5	4.3
Incomplete secondary	5.2	4.9
Complete secondary	5.5	5.9
Higher	7.2	7.3
Region		
Other Luzon	5.2	5.4
Visayas	4.9	5.0
Mindanao	4.7	5.1
Metro Manila	8.4	7.2
Type of Residence		
Urban	6.3	6.4
Rural	4.5	4.7
Religion		
Roman Catholic	5.5	4.7
Protestant	5.0	5.3
Islam	4.5	5.6
Other religions	4.9	5.6
Wealth Index (5 Quintiles)		
Poorest 20%	4.1	3.8
20–40%	4.4	4.2
40–60%	5.3	4.7
60–80%	5.6	5.8
Richest 20%	7.5	7.3
TOTAL	5.4	5.5

Number of Prenatal Visits

The recommended number of visits by the maternal care program in the Philippines is at least 3 prenatal care visits during pregnancy (NDHS 1998). Women who gave birth five years prior to 1993 and 1998 generally complied with the MCH requirement, having an average of 5.4 and 5.5 visits, respectively (Table 2).

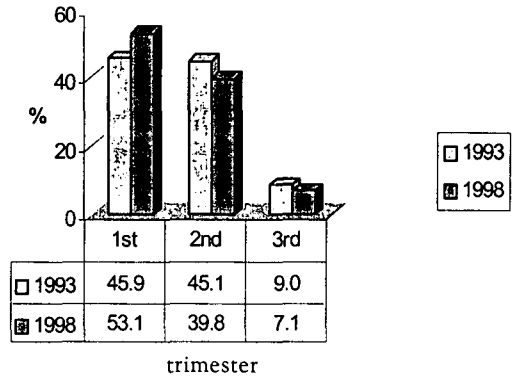
The first child usually enjoys the most number of visits (6.3 in both 1993 and 1998) while birth orders of 6 and above have the fewest visits (4.5 visits in 1993 and 4.1 in 1998). Births from highly educated mothers have at least 2 additional visits compared to less educated mothers. A decline in the number of prenatal visits from 1993 to 1998 is especially marked among mothers with no education.

Furthermore, the 1998 data shows a marked disparity in the utilization of preventive health care services (such as prenatal care) between the rich and the poor. Women residing in the poorest 20% of households have an average of 3.8 prenatal visits compared to 7.3 among women from the richest 20% of households.

Timing of First Prenatal Visit

The ideal time for the initiation of a prenatal visit is within the first trimester of pregnancy. Information on the timing of first prenatal visit in 1993 and 1998 is shown in Figure 1.

Figure 1: Timing of First Prenatal Visit, 1993 & 1998



In 1993, more than 40% of mothers obtained prenatal care during the first trimester of pregnancy. Very few mothers initiated prenatal care during the third trimester of pregnancy. It is encouraging to note that in 1998 an improvement is observed, with more than 50% of mothers obtaining prenatal care during the first three months of pregnancy. In addition, the percentage of last term visits fell by 1998 (Table 3).

Table 3. Percentage Distribution of Time of First Prenatal Visit by Maternal Characteristics, 1993 and 1998

Maternal Characteristics	1993 Trimester of first visit			1998 Trimester of first visit		
	1st	2nd	3rd	1st	2nd	3rd
Age groups (3 categories)						
15-24	45.3	47.5	7.1	46.6	44.0	9.3
25-34	47.7	43.7	8.6	56.1	38.1	5.8
35 +	42.3	46.1	11.6	51.6	40.3	8.1
Birth Order						
1	55.3	38.1	6.7	61.7	33.5	4.8
2-3	48.4	44.4	7.2	56.0	37.6	6.5
4-5	43.5	47.5	9.0	47.7	44.6	7.7
6+	32.0	52.5	15.5	37.7	50.3	11.9
Educational Attainment						
No education	41.6	44.9	13.5	33.3	40.7	25.9
Incomplete primary	37.2	50.2	12.6	38.3	50.9	10.8
Complete primary	37.0	51.0	12.0	40.8	48.1	11.0
Incomplete secondary	40.8	50.4	8.8	45.6	47.4	7.0
Complete secondary	46.8	45.3	7.9	56.5	38.4	5.2
Higher	65.1	31.0	3.9	72.0	24.9	3.1
Religion						
Roman Catholic	45.8	45.2	9.0	53.2	40.2	6.7
Protestant	49.3	42.0	8.7	57.7	37.9	6.4
Islam	45.7	43.5	10.8	42.3	41.4	16.3
Other religion	46.4	45.4	8.3	56.2	37.5	6.3
Wealth Index (5 Quintiles)						
Poorest 20%	34.9	52.2	13.0	36.1	51.6	12.3
20-40%	36.8	52.1	11.1	40.9	49.5	9.5
40-60%	41.9	50.3	7.8	45.2	45.4	9.4
60-80%	45.9	45.5	8.6	55.6	38.9	5.5
Richest 20%	68.2	27.0	04.8	70.5	26.5	3.0

** 1993 data only on weekly basis

Younger mothers (aged 15-24) generally begin their prenatal care during the 2nd trimester in 1993. In 1998, they seem to have improved in terms of earlier initiation of prenatal care, but the percentage of younger mothers seeking prenatal care during the last term has slightly increased. Also, mothers with higher birth order children tend to have their first prenatal visits later in their pregnancies.

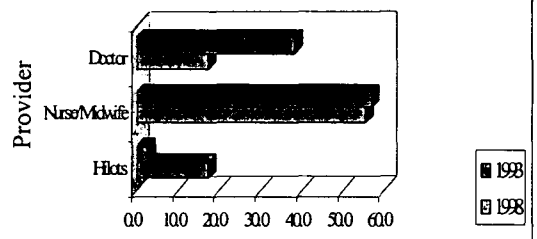
Similarly, mothers who belong to poorer households and are less educated tend to initiate prenatal care later. Between 1993 and 1998, there is an increasing likelihood that uneducated mothers are seeking prenatal care later in their pregnancies. In 1998, a quarter of all pregnant women with no education sought care during the last trimester. Muslim women are also tending to have their first prenatal visit later in their pregnancies. In 1993, 10.8 percent of first prenatal visits among Muslim women took place during the third trimester. By 1998, this figure had increased to 16.3 percent.

Provider Choice for Prenatal Care

A skilled provider during prenatal care is deemed important in potential complications during pregnancy. As shown in Figure 2, the nurse/midwife is the most popular provider of prenatal care. In both 1993 and 1998, more than half of all pregnant women received prenatal care from nurse/midwives. In 1993, doctors provided 38.3% of all prenatal care and in 1998 this figure declined to only 17.3%.

There has also been a significant rise in the use of traditional birth attendants for prenatal care over the same period (from 2.6% in 1993 to 17.3% in 1998). The increasing popularity of hilots might partially be attributed to recent efforts to train more hilots and a recent DOH mandate legalizing the services of TBAs.

Figure 2: Choice of Prenatal Care Provider, 1993 and 1998



	Hilots	Nurse/Midwife	Doctor
1993	26	57.0	38.3
1998	17.3	55.5	17.3

Prenatal Services Provided During Pregnancy

One important lesson learned during the past decade is that the "risk" approach that aims to predict which women will develop pregnancy complications is often ineffective, particularly in developing countries (Berer and Ravindran 1999). Owing to that uncertainty, it is imperative that all pregnant women have access to high quality obstetric care throughout their pregnancies. Despite the debates on the merits of prenatal care, the need to offer services that are responsive to women's needs are essential. The services commonly offered during prenatal care include tetanus toxoid, iodine, and iron supplementation as well as information regarding danger signs of pregnancy.

A decline in the percentage of women who receive tetanus toxoid was seen between 1993 and 1998 (Table 4). The 9.6% decline could probably be attributed to the tetanus controversy in 1995. Ramos-Jimenez, et al. (1999) partly attributes the drop in TT coverage to the temporary restraining order issued by the DOH to refrain from giving TT vaccinations. An improvement in the percentage of women receiving iodine supplements and iron capsules is also observed. A small percentage of mothers (33.7%) appear to be well informed about the danger signs of pregnancy. Informing pregnant women about danger signs has been cited as an important component of prenatal services. This raises questions about the quality of prenatal care services given to women despite the high coverage of prenatal care in the country.

Table 4. Percentage Distribution of Prenatal Services Utilized by Women, 1993, 1998.

Services	1993	1998
Tetanus	65.0	55.4
Iodine	34.7	55.6
Iron	69.1	74.7
Information on Dangerous Symptoms	n.a.	33.8

Multivariate Analysis

Multivariate analysis is carried out to determine the effects of each independent variable on the dependent variable used in the logit models when other socioeconomic and maternal variables are controlled. The models discussed in this section are: (1) prenatal care utilization, (2) prenatal care provider (doctor, nurse/midwife and traditional birth attendants), and (3) services provided (tetanus toxoid, iodine, iron, pap smear and breast examination).

Utilization of Prenatal Care

As reflected in Table 5, age appears to have a significant effect on the utilization of prenatal care. For each additional year of maternal age, there is a corresponding 6% increase in the likelihood of women seeking prenatal care. One might assume that although younger women are more open to new ideas and more aware of the merits of seeking prenatal care, older women may have greater economic and social capacity to decide on matters relating to their health. This could explain why older mothers are more likely to seek prenatal care.

With each additional child that adds to the family, women are 17% less likely to seek prenatal care. Constraints in economic resources due to the increasing number of household members may not be the sole reason for this decrease. It may also be the case that higher parity women spend more time attending to household concerns rather than their own health.

Closer birth spacing decreases the likelihood that mothers will seek prenatal care. Mothers with birth intervals from 9-11 months and 20-29 months are

31% and 36% less likely to seek prenatal care than mothers who have had a first child. There is no significant difference in prenatal coverage when comparing mothers with longer intervals to mothers with only one child. These results suggest that children receive greater attention and care when not competing with closely spaced siblings.

Table 5. Determinants of Prenatal Care Service Utilization, 1998

Variables	Exp(B)
Age	1.062*
Parity	.835*
Region	
Other Luzon	.888*
Visayas	1.820*
Mindanao	1.562
Metro Manila (ref)	
Type of residence	
Urban	1.158
Rural (ref)	
Education	1.174*
Marital Status	
Consensual Union	.665*
Others	.631
Legally married (ref)	
Religion	
Protestant	1.256
Islam	1.597*
Other religion	1.380
Roman Catholic (ref)	
Working Status	
Working	1.508*
Non-working (ref)	
Media Exposure	
Reads Newspaper weekly	.839
Watches TV weekly	.732
Listens to radio daily	.816
Has Knowledge on Ovulation cycle	.956
Wealth Index	
Poorest 20%	.464*
20-40%	.550*
40-60%	.633*
60-80%	.634*
Richest 20% (ref)	
Wanted status of pregnancy	.929
LPP(1)	.876
Preceding birth interval	
9-11 months	.687*
20-29 months	.642*
30-39 months	.855
40 + months	.785
First born (ref)	

* Significant at the p = .05 level ref = reference category

When controlling for the effects of other variables, Islamic mothers are 60% more likely to seek prenatal care compared to Roman Catholic mothers. Women who are in consensual unions are 34% less likely to seek prenatal care compared to their married counterparts.

There are no significant differences in prenatal coverage between urban and rural areas in 1998. However, multivariate results identify significant regional variations in the use of prenatal services. Women from the Visayas are 82% more likely to seek prenatal care compared to women from Metro Manila. This result may reflect an improvement in maternal health care delivery in the Visayas region. In addition, women residing in areas of Luzon outside Metro Manila are 11% less likely to use prenatal services compared to women from the National Capital Region (NCR).

Education has a significant effect on the likelihood of using prenatal care services. With every year increase in women's education, there is a corresponding 17% increase in the likelihood that women will seek prenatal care. Many studies have pointed to education as a strong predictor of prenatal care utilization (Potter 1991). For example, it is often observed that more educated women can be expected to have a better grasp of the benefits of prenatal care.

Births to women who are currently employed are 51% more likely to seek prenatal care compared to women who are not working. Miles-Doan and Brewster (1998), in their study on the impact of employment on women's use of prenatal care services in Cebu, Philippines, posited that women who are working have more autonomy, economic stability and control in other areas of their lives. Thus, working status can be expected to be associated with greater utilization of prenatal care.

Household economic status is also a strong predictor of the utilization of prenatal care. Higher economic status is associated with an increase in the likelihood of women seeking prenatal care. For example, women who reside within the poorest 20% of households are 54% less likely to obtain prenatal care compared to women in the richest 20% of households. Higher economic status and more household resources

appear to be associated with greater utilization of health care facilities.

Radio, television, and newspaper media exposure, whether children were wanted at the time of pregnancy/delivery, and residence in Local Performance Program area are not important predictors of prenatal care. The fact that the utilization of prenatal care does vary systematically between LPP and non-LPP areas underscores the fact that prenatal coverage is generally high throughout much of the Philippines.

Choice of Prenatal Service Provider

Multivariate analysis (Table 6) shows the results of three different models on the provider of prenatal care. Various socio-demographic and maternal characteristics are associated with the choice of either a doctor, nurse/midwife or a traditional birth attendant (hilot).

For every year's increase in age of the mother, there is a corresponding 4% increase in the likelihood of visiting a doctor. An opposite effect is seen in the choice of hilots. As the age of the mother increases by one year, there is a 2% decreased likelihood of mothers obtaining prenatal care from hilots. One might infer that older women could probably afford to pay for the physician's fee since they are expected to exercise greater control over household resources and consequentially possess greater power to provide for their own health (Brewster 1998). This may be why older women are more likely to use qualified providers.

Table 6. Results of Logistic Regression Analyses predicting the Likelihood of Women's Choice for Prenatal Care Provider, 1998

Variables	Doctor Exp(B)	Nurse/Midwife Exp(B)	TBA (Hilot) Exp(B)
Age	1.040*	1.000	.983*
Parity	.859*	.976	1.036
Region			
Other Luzon	.505*	1.479*	.964
Visayas	.429*	2.722*	3.536*
Mindanao	.303*	2.719*	2.851*
Metro Manila (ref)			
Type of Residence			
Urban	1.403*	.802*	.805*
Rural (ref)			
Education	1.198*	.973*	.968*
Marital Status			
Consensual	1.037	.815*	.893
Others	.711	1.188	1.002
Legally Married (ref)			
Religion			
Protestant	1.18	1.003	.789
Islam	.846	.288*	4.506*
Other Religion	1.259*	1.149	.820
Roman Catholic (ref)			
Respondent			
Working	.840*	1.201*	.901
Not working (ref)			
Weekly exposure to newspaper	.839*	.977	1.368*
Watches TV weekly	.854	.771*	1.389*
Daily exposure to radio	.903	.928	.981
Knowledge of ovulation	.799*	1.296*	1.168
Wealth Index			
Poorest 20%	.199*	2.100*	1.794*
20-40%	.270.*	2.961*	1.850*
40-60%	.357*	3.189*	1.531*
60-80%	.601*	2.123*	1.270
Richest 20% (ref)			
Wanted Status of the Child	1.096	.962	.963
LPP Provinces	.989	1.098	.634*
Preceding birth interval			
9-11 months	.793*	1.360*	.892
20-29 months	.633*	1.318*	1.214
30-39 months	.677*	1.361*	1.299
40 + months	.814*	1.401*	1.172
First Born (ref)			

*Significant at the p = .05 level ref = reference category

The total number of children ever born to mothers has a negative effect on the choice of doctor as a prenatal care provider. Results show a 14% reduced

likelihood of using a doctor with each additional child born. Considering that household expenditures increase with more family members, perhaps a highly trained provider might be less affordable. Parity has no significant effect on the choice of a nurse/midwife or hilot.

All three models show a significant association between the type of residence and the choice of provider for prenatal care. Urban mothers are 40% more likely to consult a doctor for prenatal care compared to their rural counterparts. On the other hand, urban mothers are 20% less likely to choose a nurse/midwife and 20% less likely to use hilots. This result is consistent with other studies on provider choice which report that urban women have greater access to more qualified health care providers.

Compared to Metro Manila, women in other regions are less likely to seek the services of doctors during pregnancy, more likely to go to nurse/midwives, and less likely to rely on the services of hilots. Nurse/midwives are the most preferred provider for prenatal care in regions outside the metropolis. In Visayas and Mindanao, there is a 172% increased likelihood of mothers choosing a nurse/midwife compared to Metro Manila. The popularity of nurse/midwives in these areas could reflect the active role that nurses/midwives play in providing preventive health care. Similarly, there is a greater likelihood of obtaining prenatal care from hilots in the Visayas (254%) and Mindanao (185%) in comparison with Metro Manila. Tan (1992) posits that traditional health practitioners are often preferred since they are more accessible and inexpensive compared to modern health care providers. In addition, they may offer more personalized interaction with clients and are sometimes thought to offer more effective treatment for certain illnesses perceived to be beyond the competence of doctors and other modern health professionals.

With a one-year increase in maternal education, the likelihood of seeking the services of a doctor rises by 20% and falls by 3% for both nurse/midwives and hilots. One conclusion could be that less educated women are unaware of the benefits of utilizing more qualified providers during pregnancy. However, Young (in Obermyer & Potter 1991) proposes that "the poor and uneducated need little convincing as to the benefits of modern medicine; most often, they do not utilize modern treatments because services are inaccessible."

Few significant relationships are observed in the choice of doctor as provider of prenatal care among Protestant and Islamic mothers compared to Roman Catholic mothers. However, Islamic mothers are 71% less likely to consult a nurse/midwife for prenatal care and 351% more likely to visit a hilot. It is unclear to what extent this strong preference may be due to the lack of access to more qualified providers or the interplay of cultural and traditional factors that shape health-seeking behavior.

It appears that working mothers are less likely to consult a doctor for prenatal care, but are more likely to go to nurse/midwives for prenatal visits. Although it may seem that working women have more economic capacity to pay for highly skilled practitioners, the validity of this assumption must also consider the intrinsic characteristic of the job. Certain low-paying jobs may give mothers little control over the pace and schedule of their work, little security and few benefits, resulting in compromised ability to utilize the services of more qualified providers (Miles-Doan and Brewster 1998).

Additional measures of economic status appear to have a strong influence on the choice of provider for prenatal care. Among wealthier households, there is an increased likelihood that mothers will see a doctor rather than nurse/midwives and hilots for prenatal services. This result confirms findings from previous studies that relate wealth status to the choice of highly skilled providers. Furthermore, this emphasizes the role of traditional practitioners in marginalized sectors of the country (Acuin et al. 1994).

Results in Table 6 also show that clients of nurse/midwives are better informed about when they are at greatest risk of becoming pregnant compared to clients of other providers. Considering that more health facilities are often staffed by nurses and midwives, they may spend more time interacting with clients and provide more information to clients. Somewhat surprisingly, women who obtain prenatal

Table 7. Logistic Regression of Services Availed during Pregnancy by Maternal Characteristics, 1998

Maternal characteristics	Tetanus Exp(B)	Iodine Exp(B)	Iron Exp(B)	Danger Signs Exp(B)
Age	1.007	1.026*	1.024*	1.000
Parity	1.088*	.936*	.915*	.982
Education	1.042*	1.104*	1.128*	1.081*
Marital Status				
Consensual	.688*	.858	.764*	.800*
Others	.819	.850	.667*	.971
Legally married (ref)				
Wealth Index				
Poorest 20%	1.123	.906	.451*	.744*
20-40%	1.484*	1.214	.588*	.976
40-60%	1.558*	1.397*	.703*	.752*
60-80%	1.515*	1.346*	.888*	.887
Richest 20% (ref)				
Region				
Other Luzon	1.015	1.009	.917	.499*
Visayas	1.853*	1.023	1.938*	.658*
Mindanao	1.404*	1.320*	1.665*	.889
Metro Manila (ref)				
Type of residence				
Urban	.973	1.119	1.209*	.932
Rural (ref)				
Religion				
Protestant	.879	1.052	.892	.990
Islam	.335*	.516*	.282*	.487*
Other Religion	1.051	1.126	1.032	
Roman Catholic (ref)				
Working Status				
Working	.954	.904	1.058	.827*
Not working				
Reads newspaper weekly	1.008	.869*	.762*	.938
Watches TV weekly	.787*	.871*	.933	.871
Listens to radio daily	.983	.895	.963	.792*
LPP Provinces	.959	1.155*	1.155	1.243*

* significant at the p = .05 level ref = reference category

care from doctors are 20% less likely to have correct knowledge about their ovulatory cycle, which suggests that many doctors may not be providing much information to clients during their prenatal visits.

Residence in an LPP province is not an important factor predicting the use of doctors and nurse/midwives as prenatal care providers. However, women residing in LPP provinces are 37% less likely to utilize hilots. This finding suggests that more LPP provinces may offer greater access to more qualified prenatal care providers. However, it may be too early to establish a direct link between the provision of prenatal care services in LPP areas since a relatively short time has elapsed between the initiation of the LPP program and the date of the survey.

Women with shorter birth intervals are less likely to utilize doctors for prenatal care. For example, women with birth intervals of 9-11 months are 21% less likely to seek the services of a doctor compared to women with only one child. On the other hand, women with any birth interval are more likely to visit nurse/midwives for prenatal care compared to women with only one child. The duration of the preceding birth interval has no significant effect on the utilization of hilots during the prenatal period.

Prenatal Services Provided During Pregnancy

Tetanus Toxoid during Pregnancy. A 10% decline in tetanus toxoid (TT) coverage was observed from 1993 to 1998. Table 11 shows predictors for the utilization of prenatal services. An increase in the number of children is associated with a greater likelihood of receiving TT. Education and higher wealth status are also significant predictors for mothers having TT immunization. This echoes earlier findings that poorer and less educated mothers have less access to prenatal services.

Mothers who are in consensual unions are 30% less likely to receive tetanus toxoid immunization

compared to those who are legally married. Pregnant women from the Visayas and Mindanao are more likely to receive TT injections. Perhaps the effects of the TT controversy were more pronounced in Metro Manila than in other parts of the country. The main force behind the temporarily cessation of TT immunization in 1995 was the Roman Catholic Church. However, in 1998, religious status appears to have no significant effect on the likelihood of women obtaining TT, with the exception of the decreased likelihood observed among Islamic mothers. This may indicate that this religious group is more likely to lack access to TT vaccination.

Iodine Capsule. An increased likelihood of mothers receiving iodine capsules to prevent iodine-deficiency diseases is associated with an increase in the age of the mother, higher education and economic status, and region of residence. Parity has a negative effect on iodine intake among expectant mothers. Similar to other prenatal services, Islamic women are less likely to obtain iodine capsules compared to mothers living in Metro Manila. In addition, mothers from LPP provinces appear to receive more iodine supplementation.

Table 8: Results of Logistic Regression for Pap Smear and Breast Exam

Maternal Characteristics	Pap Smear Exp(B)	Breast Examination Exp(B)
Age	1.046*	1.014*
Parity	0.945*	.948*
Education	1.027	1.032*
Marital Status		
Consensual Union	0.869	.710*
Others	0.853	.928
Legally Married (ref)		
Wealth Index		
Poorest 20%	0.438*	.612*
20-40%	0.579*	.678*
40-60%	0.549*	.642*
60-80%	0.581*	.830*
Richest 20% (ref)		
Region		
Other Luzon	0.491*	.465*
Visayas	0.433*	1.015
Mindanao	0.427*	1.125
Metro Manila (ref)		
Type of Residence (urban)	0.937	1.222*
Religion		
Protestant	1.272	1.296*
Islam	0.330*	.204*
Others	1.461*	1.010
Roman Catholic (ref)		
Currently working	0.783*	.946
Reads newspaper weekly	0.822*	.755*
Watches TV weekly	0.790	.794*
Listens to radio daily	0.830*	.932
LPP Provinces	1.055	1.490*
Visited health facility	0.618*	.688*
Prenatal care with Doctor	0.682*	.724*
Prenatal care with Nurse/midwife	1.068	.803*
Prenatal with TBA	1.442	1.043

* Significant at the p=.05 level ref = reference category

Iron Tablets or Capsules. A greater likelihood of receiving iron capsules among pregnant women is associated with an increase in age, education, urban status, and residence in Visayas and Mindanao. A reduced likelihood is associated with increased parity, consensual marriage, lower economic status, Islamic religious affiliation, and daily reading of newspapers. It is worth noting that a substantial percentage of Islamic women (72%) are less likely to receive iron supplementation during the prenatal period, which is a notable finding given that anemia is a leading cause of maternal morbidity.

Information on the Danger Signs of Pregnancy. Educating pregnant clients on signs that could endanger their pregnancy is imperative for improving the quality of prenatal services. Factors associated with the greater likelihood of obtaining information on the danger signs of pregnancy include increased years of education, higher wealth status and living in an LPP province. Decreased likelihood of mothers receiving information on danger signs of pregnancy include

women living in consensual unions, lower household wealth status, residing in areas of Luzon outside Manila and the Visayas, Islamic religious affiliation, and daily exposure to radio. These results clearly indicate that present efforts to address the prenatal needs of the poor and less educated are inadequate.

Pap Smear and Breast Examination. Table 8 provides information of the limited percentage of women who have Pap smears during the last 5 years (18.0%) and breast exam during the last month prior to the survey date (31.1%).

With a one-year increase in age, there is a 5% greater likelihood that women will receive pap smears and the odds of having a breast exam increase by 1%. Having more children decreases the likelihood of having pap smears or breast exams. The poorer the household, the less likely women are to have pap smears and breast exams. Other regions have a lower likelihood of having pap smears compared to Metro Manila. The odds ratio for women having breast exams appear to be lower in other parts of Luzon compared to Metro Manila. Islamic women have a lower likelihood of obtaining pap smears and breast exams than Roman Catholic women. Mothers in LPP provinces appear to have a 49.0% greater likelihood of obtaining breast exams compared to mothers in non-LPP provinces (see Table 8).

Part Two

CHOICE OF PLACE OF DELIVERY AND ATTENDANT AT BIRTH

Most maternal complications occur during delivery. Likewise, most maternal deaths happen during this time. Much effort by international and local health agencies has focused on determining medical causes and identification of appropriate delivery care. This part of the study will examine factors related to choice of provider and place of delivery for women aged 15-49 using the 1993 National Demographic Survey and the 1998 National Demographic and Health Survey. Specifically, it will address the following issues: (1) differences in the choice of facility and attendant at birth in the 1993 NDS and 1998 NDHS; (2) the sociodemographic, geographic and maternal factors associated with choice of provider and place of delivery among women aged 15-49; and (3) reproductive behaviors related to choice of provider and place of delivery.

Socioeconomic, geographic and organizational factors are considered to be important determinants of delivery care in this analysis. It is hypothesized that urban residents are more likely to choose to deliver in a health facility or be attended by medical professionals compared to women residing in rural areas. Regions with more health program inputs (such as the Integrated Family Planning and Maternal and Child Health Program implemented in selected provinces) would be a positive factor in the utilization of health services. It is also posited that women with greater access to material resources will choose to seek more modern and safer modes of treatment. Moreover, women who are better informed and have higher education will be more likely to select modern medical care. Finally, women who have experienced complications during pregnancy are more likely to "self-select" and choose scientific medical treatments.

There are three major components affecting place of delivery and attendant at birth: socioeconomic, geographic and maternal factors. Study results may identify population subgroups that require focused maternal care intervention. Raymundo (1987) and Cabigon et al. (1994) reported that the lack of economic resources is a critical barrier to appropriate maternal care. In addition, the subculture of poverty that does not emphasize the importance of good health (Cockerham 1978 in Joseph and Philips 1984) may be an added obstacle. Education and access to information about modern health care technologies, on the other hand, are more likely to influence use of modern medical care (Costello 1994).

The influence of social groupings on utilization levels is emphasized by Suchman (1965 in Joseph and Philips 1984). He maintains that social networks of family and friends are important determinants of health service utilization behavior. He further states that levels of health knowledge among kin and contacts are important in influencing utilization. Such factors may partly explain differentials in health service utilization among religious, ethnic minority groups, and women from poorer households.

Physical access or proximity to health facilities has often been cited as a factor in health utilization; i.e., greater distance to health facilities can often be a deterrent to use. In the Philippines, most tertiary care facilities are located in big cities and other urban areas. In fact, 50% of obstetrics and gynecological training centers are found in Metro Manila. This means that urban residents generally have better physical access to a range of facilities. Comparisons among regions may therefore show significant differences in patterns of use and pregnancy outcomes.

The third grouping pertains to maternal factors and health utilization history. Contact with a health practitioner, visit to a health facility, or prenatal check-up may also be significant in the choice of provider and place of delivery. Pre-existing conditions or symptoms experienced during pregnancy such as edema, hypertension, vaginal bleeding and other symptoms may induce women to seek medical care. If a pregnancy is wanted, women may also be more likely to seek professional care.

Table 9a. Percentage distribution of births in the last 5 years by type of assistance at delivery, 1993 and 1998

Attendant at Birth	1993		1998	
	Number	%	Number	%
Doctor	2,289	26.0	2,338	30.9
Nurse/midwife	2,359	26.8	1,929	25.5
Traditional birth attendant	3,988	45.3	3,125	41.3
Others	149	1.7	144	1.9
None	9	0.1	15	0.2
Don't know/missing	9	0.1	15	0.2
Total	8,803	100.0	7,566	100.0

Table 9b. Percentage distribution of births in the last 5 years by place of delivery, 1993 and 1998

Place of Delivery	1993		1998	
	Number	%	Number	%
Health Facility	2,482	28.2	2,587	34.2
Home	6,303	71.6	4,956	65.5
Don't know/missing	18	0.2	23	0.3
Total	8,803	100.0	7,566	100.0

Source: NDHS, 1993 and 1998.

Dependent Variables

Three dependent variables have been identified for the multivariate analysis; namely, attendant at birth, place of delivery, and complications during delivery. Place of delivery has been defined as either at home or in a health facility. It would have been ideal to make a distinction between private and public health facilities. However, owing to the few number of cases for private doctor/clinics and other health facility categories, these two categories are combined.

Owing to the use of multiple response questions for obtaining information on the type of attendant at delivery, three statistical models were estimated (one for each type of health practitioner; namely, doctors, nurse/midwives and TBAs). Nurses and midwives were combined into one category owing to the small number of nurses that actually attended deliveries.

Complications during delivery are computed as a dichotomous variable. If respondents said they experienced any delivery problems (such as prolonged labor, excessive bleeding, fever with bad smelling vaginal discharge and convulsions) they were considered to have had a complication during delivery.

Utilization of Delivery Services

Medical attendance at birth increased slightly between 1993 and 1998. Table 9 shows that 30.9% of all deliveries are attended by doctors in 1998, an increase of 5 percentage points since 1993. TBAs as a group are still the dominant assistants during delivery. Tan, 1992 (cited by Acuin et al. 1994) notes three reasons for the popularity of TBAs as providers of delivery care; (1) accessibility, financial as well as geographic, (2) highly personalized interaction between traditional birth attendants and mothers and (3) the perception that some illnesses are not within the competence of physicians and other health professionals to treat.

Table 9a shows the distribution of birth attendants in 1993 and 1998. In 1998, 41.3% of all deliveries are attended by TBAs, followed by doctors (30.9%) and nurse/midwives (25.4%). Between 1993 and 1998, there was a slight increase in the use of doctors (from 26.0% to 30.9%) and a small drop in the percentage of deliveries attended by TBAs (from 45.3% to 41.3%). As can be seen in Table 9b, most births still occur at home in the Philippines. However, in recent years there is some evidence that home delivery is declining. In the five-year period between 1993 and 1998, home deliveries declined from 71.6% to 65.5% of all births while deliveries in health facilities rose from 28.2% to 34.2% over the same period. This trend, if it continues, may have important benefits for the reproductive health of many women in the Philippines.

Multivariate Analysis

Model 1 – Attendant at Birth

Generally, women with less education are not as likely to select modern medical assistance during delivery. Women who have reached primary levels of schooling are more likely to seek TBA assistance during delivery. Likewise, women who are not employed more readily secure the services of TBAs during delivery than women who are in the labor force.

As expected, the wealth index is directly related to delivery care. The low level of doctor-assisted births among women belonging to the poorest 20% of households is very apparent. As can be seen in Table 10, women living in the poorest 20% of households are 83% less likely to be attended by doctors at delivery compared to women in the richest 20% of households. Results show a progressive increase in the likelihood of seeking medical attendance at birth among women from wealthier households.

Protestants, Iglesia ni Kristo and other denominations labeled in the analysis as non-Catholics exhibited consistently insignificant values. Figures show that non-Catholics are less likely to seek medical assistance than Catholics. Muslims however showed a marked preference for TBA assistance at birth compared to Catholic women.

Radio, television and print media are usually the venues for health promotions to create public awareness about major health programs as well as promoting healthy lifestyles.

The ultimate objective of health promotion is to increase appropriate use of health services such as family planning, prenatal, delivery and postpartum care. Results show that mass media channels are not effective in increasing medical attendance at delivery or maternal visits to health facilities. On the other hand, women who do not watch TV or read newspapers at least once a week are most likely to seek the assistance of TBAs at birth.

Metro Manila residents are most likely to seek the assistance of doctors. Mindanao women are least likely to seek physician services and most likely to be assisted by TBAs. This may be explained by the fact that out of the total of 1,621 obstetricians and gynecologists in the Philippines 64% are practicing in Metro Manila (de Guia 1999). Regions with the lowest number of practicing obstetricians also tend to be areas with the highest maternal mortality in the country.

Luzon women living outside Metro Manila are least likely to seek delivery assistance from TBAs and are most likely to obtain care from midwives and nurses. The preference of Mindanao women for TBA-assisted births is quite evident since there is a 403% greater likelihood of TBAs attending deliveries compared to women in Metro Manila. In the same vein, Mindanao women are least likely to have medically assisted births.

Urban residents are more likely to have medical attendance at birth. They are also less likely to solicit assistance from TBAs. On the other hand, rural mothers are most likely to deliver at home with TBA assistance. Not only are TBAs affordable and accessible, but they are also the preferred service providers for folk disorders such as "*mababang matris*" or low uterus (Acuin et al. 1994). The perceived treatment of this condition is massaging the uterus. For this condition, TBAs are often considered to be the unquestioned experts. They also perform rituals such as giving the mother a *full bath* a few days after delivery, *pagpapausuk'* (smoked) and other rituals.

The Local Government Unit Performance Program (LPP) aims to help local governments improve their health services in the fields of maternal and child health. LPP areas, however, have not always registered significant results. This may be attributed to the fact that not enough time may have elapsed between the initial implementation of the program and the 1998 NDHS for the impact of interventions to be clearly apparent.

A number of studies have concluded that maternal age and parity are highly correlated with maternal mortality (Raymundo 1987). The World Health Organization considers mothers in the extreme ages of childbearing to be at high-risk for pregnancy-related morbidity and mortality. A young woman may be at greater risk since her pelvis may not be fully developed. In addition, older women may have had previous health problems or other pre-existing conditions, which may lead to or cause complications during delivery.

Like extreme childbearing age, mothers with first births are also considered to be at greater risk. Studies have established that first pregnancy is risky, 2nd and 3rd births are safest, and risks increase with subsequent pregnancies (Royston and Armstrong, 1989). It may be reasonable to hypothesize that women in the extreme child bearing ages and high parity mothers are most likely to seek medical assistance at birth. However, results shown in Table 10 for age are not significant. Thus, age was not a strong factor in the women's choice of provider.

Unlike age, parity was found to be statistically significant. The result, however, was opposite from what is being advocated by DOH. Women with only one child are most likely to seek assistance from medical practitioners and are least likely to seek assistance of TBAs. The likelihood of having medical attendance at birth decreases with additional children. These results might be an indication of poor client-provider information exchange. Unwanted pregnancies can put a woman at risk. She may not want to seek appropriate health care or she may opt for abortion. However, findings presented in Table 10 indicate that there is no statistically significant relationship between choice of delivery attendant and whether the child is wanted or not.

Prenatal visits provide opportunities for women to know how they and their babies are doing. It is also during these visits that women are given advice regarding reproductive health, screening for possible complications of childbirth, and monitoring of health throughout the pregnancy to detect and deal with problems. It has been the prevailing practice of Filipino women to visit medical practitioners such as government midwives for prenatal care. The 1998 NDHS showed that 92% of women saw medical practitioners for prenatal care. Acuin et al. (1994) states that the preference for western trained medical assistance during the prenatal period suggests that many women consider TBAs to be inadequate for providing this type of health service. The radical change in their preference for assistance during delivery may be due to proximity. While women have the luxury of time to plan for prenatal visits, delivery requirements are often more immediate.

Respondents who have experienced prenatal symptoms such as edema, hypertension, and eclampsia are more likely to seek medical assistance at birth and more likely to deliver in a health facility. Results in Table 10 show that women are 17% less likely to be attended by doctors and nurse/midwives if they did not experience prenatal symptoms. Women who did not have delivery complications are less likely to have medical assistance and are most likely to deliver at home. These findings may be partly due to a "self-selection" process in which mothers who know they are likely to have complications at delivery are more inclined to obtain modern medical assistance.

TBAs are still popular as birth attendants even in areas where medical attendants are available. Acuin (1994), attributed this to social acceptance and proximity to

Table 10. Summary of Logistic Regression Models

Variables	Attendant at Birth			Delivery at Home	Complications During Delivery
	Doctor	Nurse/ Midwife	TBA		
Education					
0-No education	.353*	.313*	1.121	3.301*	1.103
1- Elementary	.251*	.506*	2.715*	3.930*	.937
2- High school	.449*	.856*	1.598*	2.163*	.951
3-Higher education (ref)					
Religion					
0-Non-Catholic	.926	.953	.901	926	1.094
1- Islam	.507*	.768*	3.116*	1.948*	.688*
2-Catholic (ref)					
Employment					
0-Not working	.946	1.021	1.125*	.963	.939
1-Working (ref)					
Wealth Index					
1-Poorest 20%	.169*	238*	4.023*	5.931*	1.050
2-20-40%	.246*	.345*	3.333*	3.903*	1.254
3-40-60%	.338*	.570*	2.680*	2.949*	1.287*
4-60-80%	.596*	.831*	1.905*	1.743*	1.300*
5-Richest 20% (ref)					
Media exposure					
0-Not listen to radio everyday	.988	1.132	1.125	1.012	1.079
1-Listen to radio (ref)					
0-Not watch TV at least once a week	.736*	.730*	1.203*	1.357*	1.073
1-Watch TV (ref)					
0-Not read newspaper at least once a week	.874	.787*	1.215*	1.140	.998
1-Read newspaper (ref)					
Region					
1-Other Luzon	.536*	1.164	1.910*	2.415*	.795
2- Visayas	.569*	.734*	3.800*	2.227*	.620*
3-Mindanao	.392*	.652*	5.032*	3.142*	.821
4-NCR (ref)					
Residence					
0- Urban	1.433*	1.796*	.721*	.721*	.936
1-Rural (ref)					
LGU Performance Project					
0-Not LPP province area	1.066	1.108	1.034	983	.970
1-LPP province (ref)					
Age of Women (cont. var)	1.046	.858	1.006	.971	1.063*
Children ever born					
1-1 child	2.973*	2.109*	.531*	.347*	2.533*
2-2 children	2.061*	1.658*	.587*	.467*	1.600*
3- 3 children	1.486*	1.409*	.690*	.680*	1.297*
4-4 or more (ref)					

Table 10 – continuation

Variables	Attendant at Birth: Doctor	Nurse/ Midwife	TBA	Delivery at Home	Complications During
Wanted pregnancy					
0-Not wanted	1.108	.924	.968	.880	1.012
1-Wanted (ref)					
Marital Status					
1-Living together	.824	.954	1.076	1.055	1.082
2-Others	.954	.818	1.156	1.036	1.079
3-Married (ref)					
Visit FP worker in last 12 months					
0-No visit from FP	1.146	.901	1.094	.837*	.941
1-Visit from FP (ref)					
Visit health facility in last 12 months					
0-Did not visit health facility months	.935	.981	.980	1.105	1.017
1-Visited health fac (ref)					
Went for prenatal					
0-Did not go for prenatal visit	.589*	.440*	1.285*	1.746*	1.068
1-Had prenatal (ref)					
Experienced prenatal symptoms					
0-Did not experience	.833*	.827*	1.262*	1.313*	.644*
1-Experienced symptoms (ref)					
Experienced delivery complications					
0-Did not experience	.502*	.712*	1.619*	2.233*	N/A
1-Complication (ref)					

N/A- not applicable Ref -reference category * statistically significant at .05 le vel

mothers. The popularity of TBAs may have been enhanced by the fact that in 1994, the DOH issued a circular legalizing the mandate of trained TBAs to attend normal deliveries in areas where there are no trained midwives. The decision to utilize TBAs was supposedly a stopgap measure until such time that there are enough trained midwives to provide maternal care to pregnant women. To date, the circular is still in effect and TBAs still provide delivery assistance. The DOH usually provides only a week-long training course for TBAs. Their being "trained" may give mothers a false sense of security into thinking that TBAs are capable of handling all maternity cases, even potentially risky ones.

Also, TBAs are often not provided the required administrative and logistical support. Studies have shown that immediate referral to a higher level of care is essential in cases of delivery complication. Means of communication between hospitals and the community, means of transporting complicated cases, and the necessary coordinating protocols such as case management and referral have to be strengthened. The Philippine public health sector has a referral system in which high-risk patients are referred by the rural health staff to a higher level of care–usually a district or tertiary hospital. TBAs, despite their being part of the maternal care network, cannot directly refer patients to higher-

level institutions. They normally have to pass through a medical attendant, usually a midwife or nurse.

Model 2– Place of Delivery

Table 10 also presents odds ratios accounting for the determinants of place of delivery (home or health facility). Results clearly show that women from lower socioeconomic backgrounds are more likely to deliver at home. For example, women with only elementary levels of schooling are 293% more likely to deliver at home compared to women with higher education (post secondary). In addition, women from the poorest 20% of households are 493% more likely to deliver at home compared to women in the richest 20% of households. As was the case for attendant at birth, no statistically significant relationship is established with the age of mother. On the other hand, the higher the parity, the greater the likelihood that women deliver at home. Women who are giving birth for the first time are more likely to deliver in health facilities. This may be partly attributable to the fact that the Philippine Health Insurance Corporation only pays for first deliveries. Subsequent deliveries are at the personal expense of the mother.

Place of delivery is also significantly related to urban/rural status and region of residence. Urban women are 28% less likely to deliver at home rather than in a health facility. Home delivery is also more common in regions outside the NCR. Women in Mindanao are especially prone to home deliveries. They are 214% more likely to deliver at home in comparison with mothers in Metro Manila. The greater incidence of home delivery outside Metro Manila, and the greater risks associated with home delivery may be partly due to regional differences in access to health services and sociocultural preferences for home delivery (e.g., the heavy reliance on hilots in Mindanao is no doubt partly due to cultural traditions).

Media contact appears to have little influence on place of delivery. Mothers who do not watch TV at least once a week are 36% more likely to deliver at home, while other media channels have no significant effect on place of delivery. This result implies that television may be the most effective communications medium for informing expectant mothers about the advantages of delivering (or having ready access to) modern health facilities when giving birth.

Women who did not receive any prenatal care are also 75% more likely to deliver at home. Women without adverse prenatal symptoms and complications at delivery are also more likely to have home deliveries. This finding is not exceptional in that women with health problems (either during the prenatal period or at delivery) could be expected to more readily seek modern facility-based delivery care. However, as noted in the analysis of symptoms reported during the prenatal period (see Part One of this report), there also appears to be a tendency for less advantaged women to underreport medical symptoms they may be experiencing.

Residence in an LPP province has little effect on the place of delivery. Women in LPP provinces are no less inclined to deliver at home compared to women in non-LPP areas. Given that health risks to mothers and children are significantly higher when childbirth occurs at home, it seems apparent that LPP service efforts could be doing more to promote health facility-based deliveries, especially emergency referral care for home deliveries that experience complications.

Model 3 – Complications at Birth

Many maternal complications and deaths are preventable. With appropriate and adequate health care, a number of complications need not happen. Findings show that women residing in the richest 20% of households are less likely to have complications during delivery. This result is not surprising since these women are better able to afford adequate maternal care during pregnancy and delivery.

It should also follow that women from poorer households should have more complications at delivery. However, women from wealthier households are actually more likely to report complications. A possible explanation for this finding may be that more advantaged women can better articulate

Table 11. Likelihood of Having Complications at Birth

Delivery Variables	Odds Ratio
Not attended by Doctor	
Attended by Doctor (ref)	1.092
Not attended by Nurse/midwife	
Attended by Nurse/Midwife (ref)	.892
Not attended by TBA	
Attended by TBA (ref)	.944
Delivered in Health Facility	
Delivered at home (ref)	2.359*

Ref- reference category * significant at .05 level

their health problems and identify pregnancy complications. In addition, these women may often receive more and better information from providers than poor and marginalized clients.

Despite the fact that Islamic women are less likely to have medical attendance at birth and deliver in a health facility, they are also less inclined to develop complications during delivery. The reason for this may be attributed to the fact that Islamic women tend to rely on TBAs for their prenatal and delivery needs and may not recognize complications when they occur.

Results show that women with only one birth are more likely to experience complications during delivery while women with 4 or more births (reference category) are less likely to have complications. However, caution must be exercised in drawing conclusions from this model. These estimates do not take into account women who did not survive pregnancy.

Results presented in Table 11 show that birth complications do not vary significantly by type of delivery attendant. The lack of systematic variation in this instance may be due to the small number of birth complications reported in the 1998 NDHS. However, as can be seen in Table 11, birth complications are considerably higher when women deliver in health facilities. The likelihood of a complication occurring is 136% greater when deliveries take place in health facilities rather than at home. The self-selection of high-risk mothers may be one of the reasons for higher complication rates at health facilities. Another, more disturbing, possibility may be the failure of TBAs to identify complications when they occur.

Additional Information on Delivery and Pregnancy Outcomes

Caesarian operations are usually conducted for women who have obstructed or prolonged labor. According to the World Health Organization (1999), 5-15% of births are usually delivered by caesarian section. A figure below 5 percent indicates that a substantial proportion of women do not have access to surgical obstetric care and probably die as a result. It is indicative of the inadequacy of the health system to provide for appropriate maternal care. The report cautions that a figure falling within the suggested range may still be associated with service deficiencies. A national aggregate may mask sub-national or sectoral disparities.

Of 7,526 total births in the 1998 NDHS, 5.7% were delivered by caesarian section. Inequity in the utilization of maternal health care is noted in the distribution of women who underwent caesarian procedures. In 1998, three out of four caesarian patients were urban residents. In addition, 83.0% of all caesarians were provided to women residing in the richest 40% of households.

Like complications during delivery, pregnancies that do not come to full term appear to occur somewhat randomly in the general population. There are few distinctive patterns that emerge when contrasting pregnancy outcomes with the explanatory measures utilized in this study. One notable exception is the finding that first births are at greater risk of not coming to full term compared to higher order births. The low percentage of pregnancies that are unsuccessful (5.9% of all 7566 pregnancies) may be the principal reason for this indefinite result. It is also worth noting that only 25 pregnancies are reported to have been intentionally terminated in the 1998 NDHS.

PART THREE

UTILIZATION OF POSTNATAL CARE IN THE PHILIPPINES

The postpartum period is critical for ensuring maternal survival and well-being. Many women are weakened from childbearing and placed more at risk for complications. However, women appear to ignore their own health problems since attention is more often focused on the well being of the infant.

According to the World Health Organization (1998), only a small proportion of women in developing countries-less than 30% – receive care after childbirth, yet this is the time when most maternal deaths occur. In poor countries, very few women (5%) receive such care, while in developed countries, 90% of new mothers obtain postnatal care. For every woman who dies, many more suffer from long-term complications such as uterine prolapse, fistulae, incontinence, pain during intercourse, and infertility. These problems currently affect as many as 300 million women (WHO 1998).

Low postnatal coverage in the Philippines is indicated by results from the 1993 Safe Motherhood Survey, which showed that only one third of all women of reproductive age reported seeing a health provider for check-ups after delivery. The same proportion of mothers seeking postnatal care was also noted in a study conducted in an urban community (Ramos & Salazar 1994). Postnatal visits were usually sought within 1-6 weeks after delivery. The services rendered during the visit consisted of routine physical check-ups, provision of medicines, and advice on breastfeeding. Only a few respondents mentioned having obtained advice on family planning. Zablan (1996) further noted that most Filipino women (88.9%) never consulted a doctor, nurse or midwife for a routine check-up during the postpartum period. For the few who went for consultation, around three fourths were advised on baby care and breastfeeding, while only a third had a breast exam and only one fifth had an internal examination. The country report of the 1998 Philippine NDHS reiterated that postnatal services are focused more on infant than maternal care.

The delivery of postnatal care is aimed at preventing the occurrence of maternal and child morbidity and mortality in the six-month period after delivery (PNDHS 1998). However, empirical studies indicate low utilization coverage despite the benefits of prompt postnatal visitation. This section of the report addresses the following questions: (1) what is the pattern of use of postnatal services in 1993 and in 1998? (2) What sociodemographic characteristics of mothers are significantly associated with postnatal care? (3) What factors strongly influence the use of postnatal services? (4) What factors are associated with the choice of postnatal care provider? (5) What factors exert significant effects on the provision of family planning and breastfeeding advice?

Utilization of Postnatal Care Services

The percentage of mothers obtaining postnatal care fell from 70.9% in 1993 to 58.8% in 1998 (Table 12), a 12.1 percentage point decline over this five-year period.

Table 12. Percentage Distribution of Postnatal Care, Philippines, 1993, 1998

Postnatal Care	1993 N = 5615	1998 N = 7540
No	29.1	41.2
Yes	70.9	58.8

Table 13. Percentage Distribution of Timing of Postnatal Visit, Philippines, 1993, 1998

Postnatal Care	1993	1998
Less than a week	50.7	43.1
1 - 2 weeks	32.6	37.7
3 - 4	14.7	16.0
5+	1.9	3.3

Timing of Postnatal Visit

The WHO Program on Safe Motherhood recommends that all women have at least one postpartum visit within three days of delivery. The visit will provide the mother an opportunity to be assessed for

possible complications and receive advice on nutrition, breastfeeding and contraception.

In 1998, less than 50% of all mothers who obtained postnatal care consulted a health worker less than a week after childbirth. This is a decline from 50.7% in 1993. The percentage of mothers with postnatal visits falls as the number of weeks after delivery increase. However, since only 58.8% of mothers obtained any postnatal care in 1998, the total percentage of mothers with a postnatal check within a week of giving birth is actually only 28.4%.

Table 14 shows the association between postnatal care utilization and various socio-demographic and maternal characteristics. In the 1993 and 1998 surveys, mothers aged 25-34 are slightly more likely to seek postnatal care while younger women are less likely to obtain care after childbirth. There is a strong association between post-natal care and education. The percentage of women obtaining care after delivery increases with the level of educational attainment.

Mothers with first-born children are more likely to obtain care after childbirth. The proportion of mothers seeking care decreases with higher birth order. However, it is evident in both surveys that mothers with five or more children are less likely to receive postnatal care.

In both 1993 and 1998, Islamic mothers are more inclined to seek postnatal care. In addition, in terms of place of residence, mothers from urban areas are slightly more likely to obtain postnatal care than their rural counterparts. Regional variations reveal a weaker association. However, it is interesting to note that postnatal coverage in Visayas and Mindanao declined substantially from 1993 to 1998 while Metro Manila registered a slight increase in the proportion of mothers receiving postnatal care.

Maternal health care during pregnancy and delivery is strongly associated with postnatal care, particularly in terms of place of

Table 14. Percentage Distribution of Live Births with Postnatal Care according to Maternal and Background Characteristics, Philippines, 1993, 1998.

Background Characteristics	1993		1998	
	%	N	%	N
Age				
15 - 24	67.3	1209	54.4	1533
25 - 34	72.0	2885	60.9	4112
35+	71.5	1521	57.8	1896
Educational Attainment				
No education	56.8	146	49.1	167
Incomplete primary	65.5	863	46.3	1027
Complete primary	67.2	1356	52.6	1550
Incomplete secondary	70.6	872	54.4	1304
Complete secondary	70.5	1134	60.2	1597
Higher	80.6	1244	73.3	1893
Birth Order				
1	72.8	1080	63.4	1902
2	72.5	1124	61.4	1570
3	71.6	933	61.4	1284
4	72.7	751	58.0	899
5+	67.4	1726	50.8	1884
Religion				
Roman Catholic	70.7	4673	58.1	6047
Protestant	71.7	152	59.7	536
Other	69.9	574	56.7	563
Islam	75.5	212	70.5	387
Place of Residence				
Urban	72.9	2791	66.1	3453
Rural	68.8	2824	52.6	4087
Region				
Other Luzon	69.6	2308	60.8	3044
Visayas	69.3	1187	47.5	1614
Mindanao	74.6	1374	57.4	1839
Metro Manila	70.3	745	73.0	1044
Prenatal care				
No Prenatal	35.7	392	21.8	588
With Prenatal	73.5	5223	62.0	6949
Place of Delivery				
Home	67.2	3880	52.0	4950
Public facility	76.0	1085	64.9	1470
Private facility	84.1	642	81.1	1114

delivery. Mothers with prenatal care are more likely to obtain care after delivery. Place of delivery showed a strong association with postnatal care. Deliveries in private facilities seek follow-up care more often than deliveries occurring at home or in public facilities.

Choice of Postnatal Care Provider

Table 15 reveals that the percentage of women who go to doctors after delivery is slightly higher among women aged 25-34. More than half of all mothers with greater educational attainment sought consultations with doctors after delivery.

Table 15. Percentage Distribution of Live Births by Source of Postnatal Care according to Maternal and Background Characteristics, Philippines, 1993, 1998

Background Characteristics	Doctor		Nurse/Midwife		Hilot	
	1993	1998	1993	1998	1993	1998
Age						
15-24	21.0	18.1	25.2	17.6	29.3	21.7
25-34	28.1	25.7	27.5	21.1	26.4	18.5
35+	26.0	23.3	26.0	19.6	29.4	20.1
Educational Attainment						
No education	2.7	1.2	6.8	3.6	49.0	44.0
Incomplete primary	7.6	4.5	20.9	13.3	42.5	30.8
Complete primary	13.9	8.8	27.7	19.1	33.8	28.1
Incomplete secondary	20.5	14.3	28.9	24.1	30.5	19.3
Complete secondary	29.9	24.6	29.3	26.1	20.9	14.1
Higher	55.1	53.3	27.5	18.0	13.2	9.0
Birth Order						
1	35.7	33.8	27.7	19.0	20.9	15.9
2	32.8	26.9	26.3	20.8	23.2	18.2
3	26.6	24.9	29.1	23.0	26.0	18.0
4	23.8	20.0	26.9	21.5	30.5	20.0
5	16.0	11.1	24.6	17.7	35.0	225.3
Religion						
Roman Catholic	26.9	24.5	26.9	20.7	26.4	17.2
Protestant	22.9	27.4	26.8	19.9	33.6	18.4
Other	23.9	18.6	28.6	17.7	27.4	22.0
Islam	13.2	9.6	14.2	13.4	58.3	54.8
Place of Residence						
Urban	38.5	36.9	28.0	21.8	17.9	12.8
Rural	13.6	9.6	14.2	13.4	58.3	54.8
Region						
Other Luzon	22.2	23.9	32.3	26.0	24.0	14.9
Visayas	24.3	14.9	25.0	14.8	28.2	20.5
Mindanao	14.8	15.0	23.9	15.2	47.2	31.7
Metro Manila	61.1	51.1	16.5	19.2	3.5	10.2
Prenatal care						
No Prenatal	6.4	3.7	9.7	5.8	21.7	12.6
With Prenatal	27.5	25.2	27.9	21.3	28.3	20.1
Place of Delivery						
Home	6.8	5.2	28.6	22.5	38.2	27.7
Public facility	63.1	48.5	25.0	19.0	5.7	4.4
Private facility	78.8	72.3	17.3	10.3	3.0	3.4

The proportion of mothers obtaining postnatal care from doctors decreases with higher birth orders. Mothers with first-born children are more likely to see a doctor after childbirth. In terms of religion, doctors are most preferred by Roman Catholics in 1993 and Protestants in 1998. However, Islamic mothers are least likely to seek postnatal care from doctors in the two surveys. In the same vein, doctors are least preferred for postnatal care in Mindanao and most popular in Metro Manila.

Mothers with prenatal care are more likely to consult doctors for postpartum services. There is also a strong association between choice of doctor as postnatal caregiver and place of delivery. Mothers who delivered at home are least likely to obtain postnatal care from a doctor while private facility deliveries are usually followed by consultation with physicians.

Women with no education are least likely to consult nurse/midwives while mothers who have completed secondary education most likely go to a nurse/ midwife. Across regions, women living in areas of Luzon outside Metro Manila have the largest proportion of mothers obtaining postnatal care from nurse/midwives. Birth order does not have a clear pattern of association with choice of nurse/midwife as a postnatal care provider. Similarly, there is no substantial difference among mothers in terms of place of residence and religion.

The link between choice of hilot and sociodemographic characteristics of the mother revealed a strong association with educational attainment. Preference for the hilot decreases with an increase in educational attainment. Women with less education consistently have the highest percentage seeking care from traditional birth attendants.

There is a strong association between birth order and choice of hilot for postnatal care. Mothers with lower order births are less likely to visit hilots after childbirth. Rural mothers are twice as likely to obtain postnatal care from a TBA than their urban counterparts. Among regions, more mothers from Mindanao preferred the hilot as a provider of postnatal care.

More mothers with prenatal care consult hilots after childbirth compared to those without consultation during pregnancy. Place of delivery likewise shows a strong association. Women who deliver at home are far more likely to consult hilots for postnatal services. These women are therefore at greater risk of suffering health complications at delivery and during the postnatal period.

Table 16. Odds Ratios of Significant Variables estimated from Binary Logistic Regression of Utilization of Postnatal Care, Philippines, 1998.

Variables	Exp(B)
Age	1.013*
Parity	.951*
Religion	
Roman Catholic	.480*
Protestant	.495*
Other religions	.454*
Islam (ref)	
Non-working status	.752*
Region	
Other Luzon	1.341*
Visayas	
Mindanao	
Metro Manila (ref)	
Wealth Index	
Poorest 20%	.672*
20-40%	.670*
40-60%	.787*
60-80%	.779*
Richest 20% (ref)	
Male child	1.111*
Prenatal Care	
No Prenatal Care	.214*
With Prenatal Care (ref)	
Place of Delivery	
Home	.424*
Public facility	.534*
Private Facility (ref)	
Does not read newspaper once a week	.856*
Discuss family planning with partner	
Never	.801
Once or twice	.863*
More often (ref)	
Has Local Performance Program (LPP)	.642*

* Significant at .05 level
ref = reference category

Multivariate Analysis

There are six dependent variables used in the multivariate analysis; namely, whether mothers obtain postnatal care; the doctor as postnatal health provider; the nurse/midwife as postnatal care giver; the hilot as postnatal health provider; discussion of family planning during postnatal visits; and whether breastfeeding advice is received during postnatal visits.

Table 17. Odds Ratios of Significant Variables estimated from Binary Logistic Regression of Postnatal Care Providers

Variables	Doctor	Nurse/ Midwife	Hilot
Age	1.041*		.981*
Parity	.885*		
Education	1.112*		.952
Religion			
Roman Catholic			.401*
Protestant			.464*
Other religions			.451*
Islam (ref)			
Non-working status	.722*		.851*
Legal marriage			
Type of Residence			
Urban	1.302*		.847*
Rural (ref)			
Region			
Other Luzon	1.634*		.723*
Visayas			
Mindanao			
Metro Manila (ref)			
Wealth Index			
Poorest 20%	.568*	.480*	1.630*
20-40%	.576*	.615*	1.741*
40-60%	.581*		1.752*
60-80%	.703*		1.470*
Richest 20% (ref)			
Male child			
Child not wanted at time of birth			
Prenatal Care			
No prenatal care	.390*	.202*	.294*
With prenatal care (ref)			
Place of Delivery			
Home	.060*	4.932*	5.123*
Public facility	.589*	2.406*	
Private facility (ref)			
Does not read newspaper once a week	.720	.808*	1.290
Does not watch TV every week		.823*	1.311*
Does not listen to radio everyday		1.191*	
Discuss family planning with partner			
Never		.728*	
Once or twice		.678*	1.286
More often (ref)			
Has Local Performance			
Program (LPP)	.778*		.610*

* Significant at .05 level ref = reference category

Use of Postnatal Care

Table 16 shows odds ratios estimated from the regression model of postnatal care. Age has a significant effect on postnatal care. With a single year increase in age, there is a 1% greater likelihood of obtaining postnatal care. Conversely, parity is associated with decreased odds of receiving postnatal care. It is also important to note that the sex of the child is an important determinant of postnatal care. Mothers with male infants have an 11% greater likelihood of seeking postnatal care than mothers with female infants.

Women residing in areas of Luzon outside Metro Manila are 34.1% more likely to obtain postnatal care than mothers in Metro Manila. Postpartum coverage in other regions is not significantly different from Metro Manila. Mothers who are Roman Catholic, Protestant and from other religious groups have a 45% to 50% reduced likelihood of obtaining care after delivery in comparison to Islamic mothers. This observation is in agreement with bivariate results where Islamic women are more likely to obtain postnatal care (primarily from hilots).

Work status also has a significant impact on postnatal care. Non-working status is associated with a 25% decreased likelihood of obtaining care after delivery. Using the wealth index as a proxy

measure for economic status, it appears that low and middle economic groups are associated with decreased odds of obtaining postnatal care relative to the richest 20% of households.

Prenatal care and place of delivery are associated with the utilization of postpartum services. There is a 79% reduced probability of obtaining postnatal care if mothers have no prenatal care. Deliveries at home and in public facilities are less likely to obtain follow-up care than deliveries at private facilities (the reference category for place of delivery).

Media contact is generally not important in predicting the use of postnatal services. Mothers who read newspapers are more likely to obtain postnatal care. Greater couple communication about family planning is also associated with more postnatal care. Mothers who never discuss family planning with their husbands are 20% less likely to obtain postnatal care.

Residence in an LPP province is also associated with significantly lower postpartum service utilization. Mothers in LPP provinces are 36% less likely to obtain postnatal care compared to mothers living in LPP provinces. Greater effort is clearly needed in providing high quality postpartum care as part of the expanded LPP service package.

Choice of Postnatal Care Provider

Table 17 presents results of the multivariate analyses predicting the choice of postnatal care provider. Odds ratios that account for women's preferences are shown for three types of caregivers; namely, doctors, nurse/midwives, and hilots.

Age is only significant for the choice of doctor and hilot as postnatal providers. With a single year increase in age, the likelihood of consulting a doctor for postnatal care increases by 4%. On the other hand, the odds of choosing a hilot falls by 2 percent for each single year increase in age.

Preference for doctors during the postnatal period decreases with parity. For every additional child, postpartum mothers are 12% less likely to obtain care from a doctor. Studies on maternal health services have also associated higher parity with lower probabilities of consulting a doctor. Preference for physicians as maternal health care providers can readily be depressed by higher costs. Moreover, mothers with more children may feel more confident managing their own health care due to experiences gained from prior deliveries. Thus, they may believe that the need for consulting competent health providers is negligible.

Table 18. Odds Ratios of Significant Variables estimated from Binary Logistic Regression of Postnatal Care Services: Family Planning and Breastfeeding Advice, Philippines, 1998

Variables	FP Advice	BF Advice
Age		
Parity		.916*
Education	1.032*	
Religion		
Roman Catholic	2.296*	1.474*
Protestant		
Other religions	2.324*	
Islam (ref)		
Non-working status		
Legal marriage		1.244*
Urban residence		
Region		
Other Luzon		
Visayas	.637*	
Mindanao		1.500*
Metro Manila (ref)		
Wealth Index		
Poorest 20%		
20-40%		.567*
40-60%		
60-80%		.786*
Richest 20%		
Male child		1.178*
Child not wanted at time of birth	1.266*	1.195*
No Prenatal Care	.442*	.526*
Place of Delivery		
Home		.576*
Public facility	1.436*	
Private facility (ref)		
Does not read newspaper once a week	.814*	
Does not watch TV every week		
Does not listen to radio everyday		
Discuss family planning with partner		
Never	.506*	.646*
Once or twice	.624*	.730*
More often (ref)		
Has Local Performance Program (LPP)		

* Significant at .05 level ref = reference category

Education emerges as an influential factor determining the choice of hilot and doctor as postnatal care providers. There is a 4% decreased odds of using hilots for every year's increase in education. An additional year of education is associated with an 11% increased likelihood of going to a doctor for postnatal care. This tends to affirm Caldwell's postulate (as cited by Becker et al. 1991) that education gives women more power over their circumstances, which may lead to greater utilization of modern health care.

Religion is only an important determinant of postnatal provider when predicting the choice of hilot. Compared to Muslim women, all other religious groups are much less likely to consult hilots for postnatal care. This is consistent with the findings of Santos-Acuin et al. (1994), which found that Islamic women prefer traditional healers when obtaining postpartum care.

Urban residence is significant in the models calculating choice of doctor and hilot as caregivers after delivery. Mothers from urban areas are 30% more likely to see a doctor and 15% less likely to consult a hilot after delivery compared to their rural counterparts. By region, postpartum women from areas of Luzon outside Metro Manila have a 63% greater likelihood of consulting nurse/midwives and 28% lower likelihood of using hilots in contrast to mothers in Metro Manila.

Women who are not working have decreased odds of consulting either doctors or hilots for postnatal care compared to working women. This is probably attributed to the impact of employment on the economic stability and decision-making of women. The household wealth index is an important factor in all models predicting choice of postnatal care provider. Relative to the richest 20% of households, lower status households have significantly reduced odds of obtaining postnatal care from modern providers. Lower economic status increases the likelihood of obtaining postnatal services from traditional caregivers. There is a 50% to 60% greater likelihood of seeking postnatal care from hilots among mothers with lower economic status.

Prenatal care and place of delivery produce strong effects on the choice of health provider after childbirth. Having no prenatal care reduces the likelihood of consulting any provider for postnatal care. Compared to deliveries in private facilities, public facility delivery increases the likelihood of consultation with a nurse/midwife, while home delivery is most strongly associated with nurse/midwives and hilots. Conversely, home delivery and public facility delivery are both associated with decreased use of doctors.

Non-exposure to newspapers decreases the probability of choosing physicians and nurse/midwives (by 28% and 19% respectively), while it increases the likelihood of obtaining postnatal care from hilots (by 29%). Other media channels do not have consistent effects in predicting the choice of postnatal care provider. Non-access to television decreases the odds of consulting nurse/midwives by 18%, increases the likelihood of seeing a hilot by 31%, but has no effect on selecting doctors for postnatal care. Non-exposure to radio increases the odds of using nurse/midwives, but is not important in predicting the utilization of other postnatal caregivers. To summarize, newspaper readership does appear to have a systematic impact on the choice of postnatal service provider. Other media channels have weaker associations with the use of doctors, nurse/midwives, and hilots for postpartum care.

The frequency of communication between husband and wife concerning family planning also has little clear effect on the choice of postnatal service provider. Couples with more infrequent communication are less likely to use nurse/midwives and are more inclined to consult hilots, but there is no significant effect on the decision to use doctors for postnatal care.

Results in Table 17 also report that residence in an LPP province is associated with reduced use of doctors and hilots for postnatal services. Being in an LPP area decreases the odds of obtaining postnatal care from doctors and hilots by 22% and 39% respectively. Thus, in addition to promoting greater utilization of postpartum services, LPP program managers also need to encourage greater client-doctor interaction during the postpartum period.

Postnatal Care Services: Family Planning Advice and Breastfeeding Advice

Counseling on family planning (FP) and breastfeeding is an important component of postpartum care. Family planning advice keeps mothers aware of their options to space or limit childbearing after delivery. It reduces the risks of women for poorly timed and unwanted pregnancies. In the same vein, advice on breastfeeding not only enlightens mothers on the benefits of breastfeeding, but most importantly promotes understanding of the relevance of breastfeeding on postpartum contraception.

Table 18 presents the odds ratios estimated from regression models on family planning and breastfeeding advice. The age of the mother is not important in predicting when family planning advice is obtained. However, an increase in parity decreases the likelihood of receiving advice on breastfeeding by 8 percent. Conversely, education has a positive effect on obtaining family planning advice. For every additional year of schooling, there is a 3 percent greater likelihood of receiving FP advice during a postnatal visit. In addition, Roman Catholic mothers are more likely to receive family planning and breastfeeding advice than Muslim women.

Mothers from urban areas are 24% more likely to receive advice on breastfeeding than rural mothers. Compared to mothers in Metro Manila, women residing in other Luzon areas are 36% less likely to discuss family planning during postnatal visits, while mothers in Mindanao are 50% more likely to receive breastfeeding advice.

Whether a child is wanted at the time of birth emerges as a significant predictor for acquiring family planning and breastfeeding advice during postpartum visitations. Unwanted children at the time of birth increase the probability of discussing family planning and breastfeeding with a health worker by 27% and 20% percent respectively. Curiously, with respect to family planning advice, women with unwanted births may be somewhat more motivated to space or limit subsequent births.

Women who do not obtain prenatal care also seem to be less concerned with acquiring knowledge about family planning and breastfeeding. As is shown in Table 18, having no prenatal care decreases the odds of obtaining family planning and breastfeeding advice after childbirth. In addition, women who deliver their children at home are 42% less likely to obtain breastfeeding advice during postnatal visits. On the other hand, women who deliver in public facilities are 44% more likely to be exposed to family planning advice during the postnatal period. This finding is also somewhat unanticipated given that women who deliver in private facilities are more likely to obtain postnatal care following delivery.

As expected, discussion of family planning with partners has a significant impact on family planning and breastfeeding advice. Mothers who never and seldom discuss family planning with their partners are less likely to receive FP and breastfeeding advice during their postnatal visits. Couples that discuss family planning more frequently also appear to be more proactive in obtaining information about family planning and breastfeeding.

Finally, mothers living in LPP provinces are not more likely to obtain family planning and breastfeeding advice as part of their postpartum service compared to mothers in non-LPP areas. When strengthening the provision of postpartum care in LPP provinces, greater attention should be given to the quality of counseling and range of information provided to clients.

Conclusions and Recommendations

This study confirms that education and socioeconomic status are strong predictors of prenatal, delivery and postnatal service utilization. Women with higher educational attainment and socioeconomic status are more likely to use prenatal and postnatal services and professional medical practitioners at delivery. Needless to say, more marginalized women (i.e., the poor and less educated), are relatively under-served in terms of maternal health care services. This could reflect the pervading inequality of access to maternal health care among the less privileged groups of women in the population.

Recommendations

- Policies and programs initiated by government and non-government organizations should continue to give priority to the under-served population, particularly less educated and poorer women. Inequities may be addressed by making quality health services accessible to under-served areas and provide some form of health insurance for essential services. Since local governments are the health providers, it is critical that their management abilities be strengthened.
- There is need to improve awareness of health programs and services by the public health sector. Health promotion as measured by three media variables seems ineffective. Reinforcement through other social mobilization strategies is essential. Also, health provider-client information exchange is another factor that needs improvement. Agencies responsible for IEC development should evaluate the needs of target groups in order to get essential messages across.

There is a decline in the utilization of postnatal care from 1993 to 1998. The use of postnatal care services is not merely a function of the mother's socio-demographic characteristics, but most importantly, of the maternal health care received during the prenatal period and at delivery. Similarly, the choice of provider for prenatal and delivery care influences women in their choice of postnatal care provider.

Recommendations

- Addressing postnatal care requires an approach that will integrate policies and interventions that strengthen the maternal health services starting from prenatal, to delivery, and postnatal care. Reiterating plans for postnatal care during the prenatal visit will enhance postnatal care not only as a promotive, preventive and curative intervention, but also as a life saving strategy.
- Local governments should advocate that primary and secondary health facilities should be equipped with services not only for prenatal care but also for delivery and postpartum care and they should be accessible and affordable to their clientele.
- Prenatal care services should promote the utilization of preventive services such as tetanus toxoid vaccine, iron and iodine supplementation, but also provide women with valuable information about danger signs and symptoms during pregnancy and possible complication during and after delivery. Moreover, pap smears and breast exams should be an essential part of the services that women utilize during the prenatal period. These interventions should also be tied to a functioning referral system in case complications occur during delivery and the postpartum period.
- The delivery of maternal health care services should be expanded to include other elements of reproductive health, particularly family planning, prevention and control of reproductive tract infections including STDs/HIV/AIDS, as well as counseling and education pertaining to human sexuality and reproductive health. Areas requiring particular attention include services for adolescents, male involvement in reproductive health programs, and violence against women.

TBAs are popular providers of maternal health care services, particularly during delivery and postnatal phases. Although nurse/midwives were popular providers of prenatal care, women were increasingly seeking the services of TBAs in 1998 compared to 1993. However, it is not clear how effective TBAs are in providing high quality maternal services. Health authorities have been uncertain about the significant contribution of TBA training for the reduction of maternal mortality and morbidity. However, since the demand for TBA services will likely continue to rise, further efforts will be needed to strengthen their capacities.

Recommendations

- In the past decade, less attention has been given to strengthening the skills of TBAs. Although there have been efforts to train TBAs in the past, particularly in the 1980s, there have been no comprehensive studies that reviewed the technical competence, skills and impact of TBA training in the Philippines. A study should be designed to shed light on the current status of TBAs in the Philippines and their roles in the health care system. Furthermore, findings call for further studies that explore women's preference for hilots as maternal care providers. A qualitative inquiry may offer new insights relevant to the contextual and cultural aspects of maternal health care that may lead to the enhancement of service delivery in the Philippines.
- The government and concerned agencies should focus on straightening the skills and technical competence of midwives in providing health services, including reproductive health.
- The DOH has recognized the importance of TBAs in assisting normal deliveries since there is a dearth of trained midwives to meet the maternal health care needs of women across the country. However, the role of TBAs is not clearly defined and assigned in the referral system of public health services. There is therefore a need to design referral systems that more effectively recognize the roles of TBAs.

It is important that skilled attendants attend to deliveries owing to the fact that a considerable portion of the population experience delivery complications. Among skilled maternal care providers, the midwives have the greatest capacity to assist the majority of births since the midwife-client ratio (1:5000) is much lower than that of doctors (1:20,000). Moreover, midwives usually live in their catchment areas and thus are geographically accessible to the community. However, it is rather disturbing to note that the midwives' share in the provision of delivery services is not large, and has also been decreasing between 1993 and 1998. Although midwives were the preferred prenatal attendants, they were the least preferred for delivery compared to doctors and TBAs.

Recommendations

- There is a need to closely examine midwives' roles in maternal health services, particularly their considerable decline in birth attendance. This calls for qualitative research that looks into the task and responsibilities of the midwife as a multiple/all-around health provider. This, too, may imply that the midwife could be over-burdened health provider who does not only conduct health promotion but is also a provider of other preventive and curative services. The midwife is also tasked with record-keeping and report preparation that often consumes a lot of her time.
- Mechanisms (programmatic) may be developed to reduce the midwives' responsibilities so that she can assume a more significant role in pregnancy/prenatal, natal and postnatal care.
- There are current initiatives to develop the entrepreneurial skills of midwives by assisting them to set up private clinics where clients could avail of their services for a fee. In the light of these initiatives, it is important to examine its effects on the prenatal, natal and postnatal care. It may be worth considering the effects of their entrepreneurial role in the pregnancy management, particularly among the marginalized women.

The period 1993 to 1998 were the initial years when the health system was devolved to the LGUs. Fewer resources could have been allocated to frontline health workers (particularly the midwives) in undertaking outreach work, especially in hard-to-reach areas. Consequently, they are less accessible to marginalized women. The latter could turn to those that are geographically and culturally accessible health provider, who often than not, are the TBAs.

Recommendation

There is a need to assess the effects of devolution in the utilization and delivery of maternal health services. Furthermore, it is important to examine in retrospect, the perceptions of midwives and other allopathic health providers regarding how this structural and social change has affected their roles especially in the provision of quality care to expectant mothers before, during and after delivery.

NOTE

[1]This integrated report is part of the secondary analysis project for the 1998 National Demographic and Health Survey. Separate reports on prenatal, delivery, and postnatal care were completed by Ms. Carcallas, Ms. Tan and Ms. Usman-Bansuan. Dr. Ramos-Jimenez and Ms. Rodriquez served as advisers for the project. The authors wish to acknowledge the technical assistance provided by Dr. Andrew Kantner, consultant for Macro International.

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THE TIMING OF FIRST BIRTHS AMONG YOUNG ADULTS IN THE PHILIPPINES

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EXECUTIVE SUMMARY

This study examines trends and determinants in the initiation of family formation in the Philippines. Results show that the age at first marriage has not changed greatly between 1993 and 1998 (from 20.6 years of age in 1993 to 20.0 years of age in 1998). However, this analysis found that there is some evidence that non-legal marriages may now be slightly more common.

There is little evidence of any significant change in the timing of first births between 1993 and 1998. The mean age at first birth rose slightly among legally married women (from 21.6 years in 1993 to 22.1 years in 1998), but there is no evidence of any change among non-legally married women. There appears to have been a significant rise in the age at first birth in Metro Manila and the Visayas, but modest declines elsewhere.

The average duration from marriage to first birth has not increased greatly between 1993 and 1998. In 1993, young adult women waited an average of 13.5 months to have their first child after marriage. By 1998, this figure had increased to 13.9 months. These trends, while not of great magnitude, do suggest that more couples are using contraception in order to space the arrival of their first child.

The percentage of births conceived before marriage (defined as live births occurring within seven months of marriage and children born prior to marriage) has declined from 21.5% in 1993 to 18.8% in 1998. The largest declines occurred among older women, in areas of Luzon outside Metro Manila, and among women who are legally married. This decline may be due to the greater use of contraception prior to marriage and/or recent declines in the level of premarital sexual activity. Somewhat more conservative reproductive behavior may very well be the outgrowth of more prominent worries about risks associated with the spread of sexually transmitted diseases, especially HIV/AIDS.

Multivariate results show that young adult women who use modern or traditional methods are more likely to delay having their first child. This result is especially notable among young adult women who have ever used a modern method. The provision of appropriate family planning services to young adult newlyweds would appear to be an effective intervention for providing more couples with the means to delay their first child.

Education is a powerful determinant of the age at first birth. Women with more schooling are far more likely to delay having their first child. It seems apparent that the promotion of more schooling for girls, especially at secondary and post secondary levels, could be expected to generate further gains in the age at first birth.

Young adults who initiate sexual activity at a later age have shorter intervals from marriage to first birth. This may be due to women marrying later in life being more inclined to have a child soon after marriage. However, a somewhat confounding finding is that the ever-use of contraception among young adults is not associated with longer intervals from marriage to first birth (while a significant positive effect is reported for all women of reproductive age).

Young adults who spend more time in school (and delay marriage and the start of childbearing) are also more likely to have longer intervals from marriage to first birth.

Births that were conceived prior to marriage tend to be more likely among non-Muslim young adult women and women with higher socioeconomic status. Greater educational attainment among young adults is positively associated with higher premarital conception. From these results, it is not clear to what extent young adults are out of school owing to a premarital conception or have conceived prior to marriage because they are already out of school. In addition, young adult women from wealthier households are also more likely to have premarital conceptions. Women from the poorest 20% of households are 64% less likely to have a premarital conception compared to women in the richest 20% of households. These patterns suggest that unmet need for family planning services is not confined to disadvantaged women from poorer socioeconomic settings.

Introduction

The birth of a first child initiates the sequential process of childbearing. It also has a direct effect on the pattern of childbearing within the reproductive life span. As young adults begin to realize their capability for childbearing during puberty, societal pressures to engage in sexual activities increase and many adolescents engage in unprotected sexual activities. Sexually active young adults of both sexes are increasingly at high risk for contracting and transmitting sexually transmitted diseases, including HIV/AIDS. Young adult women are typically poorly informed about how to protect themselves (UNESCO 1998) and run considerable risks of having unplanned pregnancies.

Early childbearing entails many risks for young mothers and their children. Insofar as lower education and income and greater marital instability adversely affect the environment in which teenagers bring up their children, it might be expected that the welfare of their children would also be adversely affected. Research has also shown that young mothers, particularly unmarried ones, face psychological and emotional problems in adjusting to parenthood. Even within marriage, a young mother frequently lacks the emotional stability and experience to carry out her new role confidently. Furthermore, having a child during one's teenage years often involves the curtailment of education, which may in turn adversely impact the mother's social and economic status.

Delaying the first birth and increasing the time between births can effectively slow down rates of population growth by decreasing births per generation. In other words, some women would become sterile before they are able to have as many children as they want. Also, it is likely that women's fertility desires may decrease as women proceed through their reproductive life span (Pebley, Casterline and Trussell 1982; Trussell 1981).

Part of the concern about early childbearing probably reflects a more general apprehension about the rise in sexual activity among unmarried adolescents. In fact, one might argue that the alarm surrounding early childbearing has been largely provoked by moral concerns regarding the fact that an increasing number of teenagers are failing to marry when pregnancy occurs (Raymundo et al. 1999).

Defining Young Adulthood

The United Nations has defined "youth" as individuals in the age group 15 to 24. They are commonly referred to as young adults. This time should be ideally devoted to schooling, making friends, shaping and attaining dreams, as well as making decisions that will influence and determine their future lives. One such important decision concerns their sexuality and reproductive health.

In 1995, 50% of the world's population was below the age 25 and about 20% were adolescents (WHO). In the Philippines, 20% of the population were young adults in 1998 (NSO). Their numbers have doubled from the 1970 figure of 7.2 million to 13.7 million in 1998. Globally, an estimated 15 million teenage women have children each year, which accounts for one-fifth of all births.

Data on fertility trends have shown that young adult fertility rates have remained largely unchanged from the 1970s to the 1990s in many regions of the world.

In addition, even if the level of adolescent childbearing is low, the absolute number of adolescents giving birth is rising because of their increasing numbers (Diaz 1999).

Studies have shown that countries in sub-Saharan Africa have the highest levels of adolescent childbearing. Asian countries, including the Philippines, tend to have low-to-moderate adolescent fertility rates (Singh 1998). With regard to the timing of childbearing, adolescents in the sub-Saharan region and Latin America typically begin childbearing by the age of 18. Several Asian countries, including the Philippines, are also typified by the early initiation of childbearing.

Objectives of the Study

This study examines adolescent and young adult childbearing in the Philippines by analyzing the timing of first births in 1993 and 1998. This analysis also examines levels, trends, and determinants of age at first sexual intercourse, the interval from marriage to first birth, and premarital conceptions. This information can provide considerable insight into the sexuality and reproductive behavior of young adults in the Philippines.

DATA

The sources of information to be used for this analysis are the 1993 National Demographic Survey (NDS) and the 1998 National Demographic and Health Survey (NDHS). The National Statistics Office in collaboration with the Department of Health (DOH), the University of the Philippines Population Institute (UPPI), and Macro International in Calverton, Maryland carried out both surveys.

Eligible respondents for the individual interviews were females aged 15-49 years who were members of the household or visitors present at the time of interview and who slept in the same household the night prior to interview date *(de facto)*. There were 15,029 (98%) and 13,983 (97%) women successfully interviewed in the 1993 and 1998 surveys respectively. The present analysis is based upon young adult women 15-24 years of age. There were 5,807 and 5,223 young women in the 1993 NDS and the 1998 NDHS, respectively. Among these respondents, 21.2% in 1993 and 20.0% in 1998 were reported to have had a first birth.

Many adolescents experience critical and defining life events—their first intercourse, first contraceptive use, marriage and their first birth. These events were previously thought to occur in a preordained order, but this is no longer the case. At the present time, first sexual encounters, age at marriage, and first births often take place in different sequential contexts.

It should be mentioned at the outset that there could be inaccuracies in reporting the date of first birth and age at marriage. This can affect the quality of information on the level of childbearing, especially on premarital births. This bias is most likely to be in the direction of minimizing the number of premarital births if women tend to misreport the date of their first marriage or first child in order to make that birth appear to be a marital conception.

Age at First Marriage

In the 1993 NDS and 1998 NDHS, marriage refers to any union of a male and female for purposes of partnership and intimacy. Thus, the term 'marriage' is broadly defined here to include consensual unions together with formal or religious unions.

As is shown in Table 1, the age at first marriage has not changed appreciably between 1993 and 1998 (from 20.6 years of age to 20.9). Young adults appear to be getting married at approximately the same ages in 1993 and 1998. Table 1 also reports that the age at first marriage is lower for women in consensual unions compared to women in formal (legal) unions (21.0 years of age for legally married women and 19.7 for consensual unions).

Composition of Marital Status

Table 2 shows that during the five-year period between 1993 and 1998, there was no substantial change in the percentage of young adults in legal marriage. However, the percentage of never married young adults aged 15-24 fell slightly from 75.1% to 73.9% over this period. This decline coincides with a substantial rise in the

Table 1. Mean Age at Marriage by Age, Marital Status, and Region of Residence, 1993 and 1998

	1993 Mean	1993 Frequency	1998 Mean	1998 Frequency
Age				
15-24	18.2	1448	18.1	1252
25-39	20.8	5511	21.2	5180
40-49	21.4	2552	21.6	2464
Total	20.6	9511	20.9	8896
Marital Status				
Legally Married	20.6	8180	21.0	7467
Consensual	19.5	781	19.7	869
Total	20.5	8961	20.9	8336
Region				
Luzon	21.6	1399	21.0	3512
Visayas	20.5	3787	21.0	1748
Mindanao	20.6	1919	20.1	2182
Metro Manila	19.9	2406	21.6	1454
Total	20.6	9511	20.9	8896

Table 2. Marital Status among All Women, 1993 and 1998

	1993			1998		
Marital Status	15-24	25-39	40-49	15-24	25-39	40-49
Never Married	75.1	15.4	5.7	73.9	13.5	6.1
Formal Marriage	20.1	74.6	79.5	20.1	76.1	79.5
Consensual Union	4.2	6.0	5.5	5.1	6.6	5.1
Widowed/Divorced/ Separated	.7	4.0	9.3	.8	3.8	9.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table 3. Mean Age at First Birth by Age, Marital Status, and Region of Residence, 1993 and 1998

	1993 Mean	1993 Frequency	1998 Mean	1998 Frequency
Age				
15-24	19.0	1229	19.0	1044
25-39	21.7	5305	22.2	4958
40-49	22.5	2485	22.8	2405
Total	21.6	9019	22.0	8407
Marital Status				
Legally Married	21.6	7747	22.1	7064
Consensual	20.6	681	20.7	736
Total	21.5	8428	22.0	7800
Region				
Luzon	22.7	1303	22.0	3310
Visayas	21.5	3598	22.1	1675
Mindanao	21.6	1822	21.2	2061
Metro Manila	21.0	2295	22.7	1361
Total	21.6	9019	22.0	8407

percentage of young adults in consensual unions; namely, from 4.2% in 1993 to 5.1% in 1998. There is some evidence that a drift toward more non-legal marriage may have been taking place in the Philippines given that there is also a slight rise in the percentage of women aged 25-39 that are living in consensual unions (from 6.0% in 1993 to 6.6% in 1998).

Age at First Birth

The mean age at first birth is shown in Table 3. In both 1993 and 1998, the mean age at first birth was 19.0 years of age. In fact, there is little evidence of any significant change in the timing of first births across all age groups during this period. The mean age at first birth rose slightly among legally married women (from 21.6 years in 1993 to 22.1 in 1998), but there is no evidence of any change among non-legally married women. Table 3 also reports that there appears to have been a significant rise in the age at first birth in Metro Manila (from 21.0 years of age in 1993 to 22.7 in 1998) and a more modest increase in Visayas. Areas of Luzon outside Metro Manila and Visayas report very modest declines in the age at first birth between 1993 and 1998.

Age at First Sexual Intercourse

In many industrialized countries, sexual activity starts in the middle to late teen years. The 1993 YAFS II study conducted in the Philippines reported that premarital sexual contacts

among never-married women aged 15-19 and 20-24 were only 0.4% and 2.1%, while 13% and 20% of all ever-married youth from the same age groups reported premarital sexual experience (Raymundo et al. 1999).

As can be seen in Table 4, there has been a slight decline in the age at first intercourse among ever-married young adults; namely, from 18.4 years in 1993 to 18.2 years in 1998. However, it is not clear whether this slight decline reflects real behavioral change. Unfortunately, it is not possible to assess trends in the age at first sexual intercourse among never-married young adults using 1993 NDS and 1998 NDHS data.

Age at First Contraceptive Use

From a strictly demographic point of view, the significance of sexual activity partly depends upon whether it occurs at a time when contraception is being used. This in turn is dependent upon how effectively contraception is employed. Even when young people want to prevent pregnancy, they may be unable to do so because they lack knowledge about contraceptive methods or access to services. Even with adequate access, young adults sometimes lack the will to use contraception effectively, especially if the partner objects.

Age at first contraceptive use appears to be declining in the Philippines (see column b in Table 4). For young adults, the age at first contraceptive use fell from 20.2 years in 1993 to 19.7 years in 1998. For older women aged 25-39 and 40-49, a declining trend is also observed between 1993 and 1998.

Column (c) of Table 4 is an approximate measure of the time young adults spend unprotected from pregnancy. It gives the difference in years of age at first sexual experience from the age at first contraceptive use. All values have negative signs indicating that sexual activity tends to precede the initiation of contraceptive use.

The largest temporal difference between the initiation of sexual activity and the use of contraception occurs for women in the 40-49 age group. They waited 7.1 years in 1993 and 5.4 years in 1998 from their first sexual experience to their first contraceptive use. This large gap can be attributed to the fact that older women probably had less access to contraception (and were likely less inclined to use a method) when they first became sexually active compared to contemporary young adults in the Philippines.

Duration from Marriage to First Birth

Table 5 shows that the average duration from marriage to first birth has not increased greatly between 1993 and 1998. In 1993, young adult women waited an average of 13.5 months to have their first child after marriage. By 1998, this figure had increased to 13.9 months. Small gains in the mean duration from marriage to first birth are also reported for older women. These trends, while not of great magnitude, do suggest that more couples are using contraception in order to space the arrival of their first child.

Previous studies have shown that older women often start child-bearing more quickly after marriage. This pattern is not supported by results from the 1993 NDS and 1998 NDHS. Older women tend to wait longer to have a child after becoming married. For example, in 1998, young adult women waited an average of 14.2 months while women aged 25-39 delayed for an

Table 4. Mean Age at First Sexual Intercourse and Mean Age at First Contraceptive Use among all Ever-Married Women, 1993 and 1998

Age Group	Mean Age at First Sexual Intercourse (a)		Mean Age at First Contra-ceptive Use (b)		Gap (c) c = a-b	Gap (c) c = a-b
	1993	1998	1993	1998	1993	1998
15-24	18.4	18.2	20.2	19.7	-1.8	-1.5
25-39	20.8	21.1	25.0	24.7	-4.2	-3.6
40-49	21.3	21.4	28.4	26.8	-7.1	-5.4
Total	20.4	20.7	25.3	24.7	-4.9	-4.0

Source: 1993 NDS and 1998 NDHS

average of 16.5 months. This result may be partly due to higher premarital conception among young adults, which can produce shorter reported durations from marriage to first birth. Longer-term behavioral change may also partly account for this difference.

Table 5. Mean Duration from Marriage to First Birth (in Months) by Age, Marital Status, and Region of Residence, 1993 and 1998

	1993 Mean	1993 Frequency	1998 Mean	1998 Frequency
Age				
15-24	13.5	1173	13.9	971
25-39	15.9	5005	16.3	4733
40-49	18.8	2358	19.0	2295
Total	16.4	8536	16.8	7999
Marital Status				
Legally Married	16.0	7388	16.4	6801
Consensual	20.2	639	19.7	688
Total	16.3	8027	16.7	7489
Region				
Luzon	17.0	1245	16.4	3173
Visayas	15.9	3427	16.6	1582
Mindanao	16.2	1698	17.0	1938
Metro Manila	17.0	2167	17.5	1305
Total	16.4	8537	16.8	7998

Table 6. Percentage of Births Conceived before Marriage by Age, Marital Status, and Region of Residence, 1993 and 1998

	1993 %	1993 Frequency	1998 %	1998 Frequency
Age				
15-24	22.1	1237	22.5	1005
25-39	22.7	5377	20.2	4930
40-49	18.6	2521	14.3	2398
Total	21.5	9135	18.8	8333
Marital Status				
Legally Married	21.6	7941	18.8	7064
Consensual	20.1	675	19.6	736
Total	21.5	8616	18.9	7800
Region				
Luzon	20.9	888	16.5	3302
Visayas	19.8	3404	20.4	1652
Mindanao	20.9	1919	19.2	2035
Metro Manila	23.8	2924	21.9	1345
Total	21.5	9135	18.8	8334

Premarital Conception

In order to be reasonably sure that a conception preceded a marital union, it is assumed that any delivery that occurred within seven month of marriage or prior to the date of marriage was a premarital conception. This is probably a conservative estimate since not all deliveries that take place during the eight and ninth months of marriage are likely to be premature births. Some caution must also be exercised in interpreting results on premarital conception since in some cultures it is common for reported dates of marriage and deliveries to be adjusted to make first births appear as though they were conceived after marriage (Hobcraft and McDonald 1984). Such bias may well be operative in the Philippines. In addition, the exclusion of pregnancies that were initiated before marriage but did not come to term may produce an underestimate of the true level of premarital conception.

Table 6 reports the percentage of women who had a premarital conception that resulted in a live birth for each age group. It reveals that young adult women have more premarital conceptions than older women. In 1998, 22.5% of all births occurring to young adult women were delivered within seven months of marriage compared to 20.2% among women aged 25-39.

In the Philippines, high levels of premarital conception may be due to the willingness of young adults to go unprotected during sexual intercourse as long as their partners are responsible or appear to be promising husbands. These early sexual encounters often result in abrupt marriages due to the occurrence of unplanned pregnancy. Also, young

adult women are sometimes forced to engage in sexual activities owing to impoverished economic circumstances, especially young women in colleges and universities who don't have the means to support themselves when living away from home.

Of considerable interest is the finding that the incidence of premarital conception appears to have declined among women who are legally married between 1993 and 1998. In 1993, 21.6% of all births among young adults were likely conceived before marriage. By 1998, only 18.8% of all births among legally married women could be classified as premarital conceptions. This decline may be due to the greater use of contraception prior to marriage and/or recent declines in the level of premarital sexual activity. Somewhat more conservative reproductive behavior may very well be the outgrowth of more prominent worries about risks associated with the spread of sexually transmitted diseases, especially HIV/AIDS.

In 1998, there is considerable regional variation in the level of premarital conception. As shown in Table 6, Metro Manila has the highest percentage of premarital conceptions (21.9%) while areas of Luzon outside Metro Manila had the lowest incidence of births conceived before marriage. With the exception of the Visayas region, most areas of the country report substantial declines in the percentage of premarital conceptions between 1993 and 1998. The most dramatic declines have occurred in Luzon (outside NCR) and Metro Manila. It is not immediately apparent why these trends have arisen, but possible declines in the incidence of premarital sexual relations plus greater use of contraception may be two factors responsible for these reductions.

Bivariate Analysis

Tables 7 and 8 present information on age at first birth, duration from marriage to first birth, and the percentage of premarital conceptions for the independent variables under consideration in this analysis; namely, age of the respondent, marital status, age at first intercourse, ever-use of contraception, religious affiliation, urban/rural status, region, educational attainment, household wealth status, and the frequency of family planning discussions with partner. Table 7 shows differentials for all women of reproductive age (between the ages of 15-49) while Table 8 presents similar information for young adults (between the ages of 15-24).

Age at First Birth by Region

Among all women of reproductive age, the mean age at first birth tends to be higher among older women, women who are legally married, women who initiate sexual intercourse at older ages, women who are non-Muslim, and women who have attained post-secondary levels of education (see Table 7). The age at first birth is also somewhat elevated in urban areas and among women living in the National Capital Region (NCR). There is also clear evidence that women from wealthier households are more likely to delay having their first child. For example, the average age at first birth among women from the poorest 20% of households is 20.6 years compared to 23.7 years among women from the richest 20% of households.

Similar patterns are generally noted for young adult women in Table 8. Two notable exceptions are the lack of any clear regional differentials in age at first birth by region and the apparent importance of couple communication in delaying the first birth. Among young adults who discuss family planning often (more than one or two times), the mean age at first birth is 19.2 years compared to 18.7 years among couples with little or no communication about family planning.

Duration from Marriage to First Birth

As reported in Table 7, the duration from marriage to first birth is longer among reproductive aged women who are older, women who are in consensual rather than legal unions, women who become sexually active at younger ages, Muslim women, and women with less education (the mean duration for women with no education is 25.4 months compared to 15.4 months for women with post secondary schooling). Findings also indicate that rural women and residents of Mindanao and NCR have slightly longer marriage to first birth intervals.

Further evidence that marriage to first birth intervals are longer among women from lower socioeconomic circumstances is provided by the household wealth index. Women from the poorest 20% of all households have mean durations of 18.7 months compared to just 16.9 months among women from the wealthiest 20% of households.

These findings are essentially consistent with earlier research findings showing that rural women tend to start childbearing at younger ages and less-educated women are more likely to bear children in their teenage years (Singh 1998, Cabigon 1984, Raymundo et al. 1999, Diaz 1999). In addition, as was noted in the YAFS-II Survey (and partially substantiated in Table 7), better-educated women marry later and have their children more quickly once married (Raymundo et al. 1999).

There are two unexpected findings in Table 8. Firstly, women who have never used contraception have considerably longer intervals from marriage to first birth compared to women who have used modern or traditional methods of contraception (20.9 months compared to 15.0 months for women who have used modern contraception and 17.0 months for women who have used traditional methods). One might have thought that contraceptive users would be more likely to delay having their first child. Secondly, less frequent couple communication about family planning is associated with longer marriage to first birth intervals. This result may imply that couples with less frequent discussion of family planning might also be less sexually active.

The differentials reported for all reproductive-aged women in Table 7 are largely reconfirmed for young adult women in Table 8. Young adults who are not legally married, who are sexually active at younger ages, who have

Table 7. Mean Age at First Birth, Duration from Marriage to First Birth, and Percentage of Births conceived before Marriage among Women (Aged 15-49) by Selected Characteristics, 1998

	Age at First Birth (Years)	Duration From Marriage To First Birth (Months)	Percent with Premarital Conception (Yes/No)
Age of Respondent			
15-24	18.9	14.2	21.1
25-39	21.9	16.5	19.9
40-49	22.5	19.3	14.9
Marital Status			
Legal	21.8	16.7	18.7
Consensual	20.5	20.0	18.8
Age at First Intercourse			
<=18	18.2	19.1	14.5
18+	24.0	16.0	17.7
Ever-Use Contraception			
Modern	21.4	15.0	20.3
Traditional	22.3	17.0	18.0
Never Use	21.9	20.9	15.7
Religion			
Catholic	21.8	16.6	18.8
Protestant	21.8	16.2	17.8
Others	21.4	15.7	18.7
Islam	20.8	23.5	16.5
Type of Residence			
Urban	22.3	16.6	21.2
Rural	21.2	17.3	16.6
Region			
Luzon	22.0	16.6	16.5
Vizayas	21.9	16.9	19.9
Mindano	21.2	17.3	18.9
NCR	22.7	17.5	21.9
Education			
No Education	20.2	25.4	19.9
Primary	20.4	18.3	13.7
Secondary	21.3	16.0	18.4
Post Secondary	24.3	15.4	25.7
Household Wealth Status			
Poorest 20%	20.6	18.7	15.7
20-40%	21.3	16.7	17.9
40-60%	22.0	15.7	19.5
60-80%	22.9	15.4	22.4
Richest 20%	23.7	16.9	22.4
Frequency of FP Discussion with Partner			
Never/Once/Twice	21.7	17.7	18.3
More Often	21.6	15.8	19.3
Total	21.7	17.0	18.6
N	8662	8214	1595

less education, and who are from poorer households are more likely to have longer marriage to first birth intervals. Young adults who are older (20-24 as opposed to 15-19), who are more educated, and are from more prosperous circumstances are more likely to accelerate the timing of their first birth once married.

Table 8. Mean Age at First Birth, Duration from Marriage to First Birth, and Percentage of Births conceived before Marriage among Young Adult Women (Aged 15-4) by Selected Characteristics, 1998

	Age at First Birth (Years)	Duration From Marriage To First Birth (Months)	Percent with Premarital Conception (Yes/No)
Age of Respondent			
15-19	16.9	13.7	18.8
20-24	19.3	14.3	21.5
Marital Status			
Legal	19.0	14.0	22.2
Consensual	18.5	14.5	17.8
Age at First Intercourse			
<=18	17.7	15.7	16.9
18+	21.1	11.6	26.2
Ever-Use Contraception			
Modern	18.8	13.4	22.9
Traditional	18.9	14.5	24.5
Never Use	19.0	14.9	17.2
Religion			
Roman Catholic	19.0	13.8	22.8
Protestant	19.5	15.6	13.2
Others	18.6	14.1	23.4
Islam	17.9	16.2	11.9
Type of Residence			
Urban	19.1	13.0	26.7
Rural	18.8	14.9	17.7
Region			
Luzon	19.1	13.6	21.8
Vizayas	19.1	13.6	24.2
Mindano	18.7	14.8	18.2
NCR	18.9	14.0	28.4
Education			
No Education	17.6	17.6	16.7
Primary	18.1	16.1	13.2
Secondary	18.9	13.8	21.2
Post Secondary	20.4	10.8	34.6
Household Wealth Status			
Poorest 20%	18.3	15.8	14.4
20-40%	19.1	14.4	17.4
40-60%	19.5	12.4	28.9
60-80%	19.7	10.6	41.1
Richest 20%	19.7	12.1	37.3
Frequency of FP Discussion with Partner			
Never/Once/Twice	18.7	14.8	18.5
More Often	19.2	13.3	25.0
Total	18.9	14.2	15.2
N	1124	1048	1087

Premarital Conception

Young adult women are more likely to have a child that was conceived prior to marriage. According to the 1998 NDHS, 21.2% of all births occurring to young adults were conceived before marriage compared to 19.9% for women aged 25-39 and 14.9% for women between the ages of 40-49. These findings imply that young adults are having more unprotected sex before getting married and are currently underserved by the Philippine family planning program.

Muslim women have the lowest levels of premarital conception. In 1998, only 16.6% of all births occurring among Muslim women are conceived before marriage. Catholic women are most likely to have a birth conceived prior to marriage; namely, 18.8% of all births. There is little variation in the level of premarital conception by type of marital union.

Patterns of premarital conception by socioeconomic status are quite distinguishable in the Philippines. In general, higher socioeconomic status is associated with greater premarital conception. Among all women of reproductive age in Table 7, the percentage of births that are conceived before marriage is sharply higher among women living in urban areas (particularly Metro Manila), women with post-secondary education, and women from wealthier households. In addition, women who have ever used modern contraception are more likely to have conceived prior to marriage compared to

women who have never used any method, which suggests that many women who have never used contraception are less likely to be sexually active before marriage.

As shown in Table 8, adolescents are less likely to have a premarital conception than young adults aged 20-24. In addition, young adults who become sexually active at older ages (age 18 and above) are also more likely to have a child that was conceived through premarital sexual activity. Premarital conceptions are also considerably higher among couples that have ever used modern or traditional family planning methods and discussed family planning more frequently. This pattern leads one to surmise that couples more inclined to use contraception and discuss family planning are also more likely to be sexually active before marriage and have first births that resulted from premarital sexual activity.

Table 9. Determinants of Age at First Birth, Duration from Marriage to First Birth, and Premarital Conception among All Women of Reproductive Age, 1998

Characteristics	Age at First Birth (B)	Duration from Marriage to First Birth (B)	Premarital Conception (Yes/No) Exp(B)
Current Age-Respondent	.196*	.118*	.972*
Marital Status			
Formal Marriage	-.006	.059*	.979
Consensual Unions (ref)			
Age at First Sexual Intercourse	.524*	-.043*	1.004
Ever-Use Contraception			
Modern	.116*	.144*	1.257*
Traditional	.028*	.071*	1.037
Never Use (ref)			
Religion			
Catholic	-.006	.136*	1.643*
Protestant	-.003	.086*	1.468*
Other	-.002	.095*	1.690*
Islam (ref)			
Type of Residence			
Urban	-.003	-.006	1.192*
Rural (ref)			
Region			
Luzon	.015	.051*	.802
Visayas	.005	.052*	1.215
Mindanao	.046*	.073*	1.141
NCR (ref)			
Education in Single Years	.271*	-.047*	1.074*
Household Wealth Index			
Poorest 20%	-.012	.016	.898
20-40%	.006	.026	.983
40-60%	.019	.045*	.966
60-80%	.013	.032*	.988
Richest 20% (ref)			
Frequency of FP Discussion with Partner			
Never/Once/Twice	.014	.005	1.050
More Often (ref)			
R^2	.489	.053	.028

Pp - -value p <=. 05
Source: 1998 NDHS

Multivariate Analysis

Three models are presented that account for aspects of family formation in the Philippines. Linear regression models are used to identify significant predictors of the age at first birth and the interval (in months) from marriage to first birth. A logistic regression model is also presented that examines determinants of premarital conception in the Philippines. Two sets of results are presented; namely, (1) for all women of reproductive age (Table 9) and for young adult women between the ages of 15-24 (Table 10).

Age at First Birth

Multiple regression results in Table 9 show that among all women of reproductive age, the age at first

Table 10. Determinants of Age at First Birth, Duration from Marriage to First Birth, and Premarital Conception among Young Adults Aged 15-24, 1998

Characteristics	Age at First Birth (B)	Duration from Marriage to First Birth (B)	Premarital Conception (Yes/No) Exp(B)
Current Age-Respondent	.413*	.073*	1.013
Marital Status			
Formal Marriage	-013	.019	1.225
Consensual Unions (ref)			
Age at First Sexual			
Intercourse	.205*	.127*	1.024
Ever-Use Contraception			
Modern	.230*	.036	1.094
Traditional	.118*	.004	1.229
Never Use (ref)			
Religion			
Catholic	.110*	.074	4.323*
Protestant	.094*	.009	1.967*
Other	.058	.051	5.259*
Islam (ref)			
Type of Residence			
Urban	.016	.025	1.163*
Rural (ref)			
Region			
Luzon	.070	.101	1.137
Visayas	.086	.110	1.645
Mindanao	.085	.101	1.433
NCR (ref)			
Education in Single Years	.276*	.097*	1.089*
Household Wealth Index			
Poorest 20%	.094*	.093	.431*
20-40%	.018	.073	.422*
40-60%	.021	.007	.680
60-80%	.037	.048	1.210
Richest 20%			
Frequency of FP Discussion with Partner			
Never/Once/Twice	.041	.030	.848
More Often (ref)			
R^2	.453	.071	.085

*Pp-
* value p <=. 05
Source: 1998 NDHS

birth is higher among older women and women who initiate sexual activity later. These are hardly unexpected results. In addition, women who use modern or traditional methods of contraception are more likely to delay having their first child. This effect is particularly notable for users of modern methods (Beta =.116 for modern method users and .028 for traditional method users).

Neither marital status nor religion are important determinants of the age at first birth. Urban/rural status and region of residence are also weak predictors. Only residence in Mindanao is significantly associated with later age at first birth, a result that is somewhat at odds with the bivariate findings presented in Table 7.

Education is a powerful determinant of the age at first birth. Women with more schooling are far more likely to delay having their first child. A single year increase in educational attainment produces an increase of .271 in the standardized Beta score for age at first birth. Therefore, it seems apparent that the promotion of more schooling for girls could be expected to produce further gains in the age at first birth.

While educational attainment is a strong predictor of the age at first birth, the wealth status of the household is not an important determinant of the age at first

birth. While bivariate results suggested that women from wealthier households were more likely to delay having this first child, these differentials were not found to be significant in this multivariate context.

The frequency of couple communication about family planning is also not a significant factor associated with delayed age at first marriage. Since the use of contraception is shown to delay the age at first birth, and since greater couple communication is generally thought to promote family planning use, this result is somewhat unexpected.

Determinants of age at first birth for young adults are shown in Table 10. While results are largely similar to findings for all reproductive aged women in Table 9, there are also some notable differences. When controlling for other factors, the age at first marriage is actually lower among young adults who are Catholic and Protestant. There were no significant effects for religion among all women of reproductive age.

In addition, women from the poorest 20% of households are more likely to have their first child at a later age compared to other women. This result, which is net of the effects of other predictors, is not consistent with expectations established by the bivariate findings in Table 8, which report that the age at first birth tends to be higher among women from wealthier households.

However, as was the case for all women of reproductive age, more years spent in school has a significant impact on the age at first birth among young adults. This finding supports other studies showing that more education and greater concentration on career advancement tends to delay women's entry into sexual and reproductive roles.

Duration from Marriage to First Birth

Table 9 presents multiple regression findings for determinants of the duration from marriage to first birth (in months). The overall model is relatively weak in accounting for variance in the interval from marriage to first birth (R2 =.053). However, there are still some statistically significant results to report.

For all women of reproductive age, the duration from marriage to first birth tends to lengthen as the age of the respondent increases. However, women who initiate sexual activity at a later age have shorter intervals from marriage to first birth. This may be due to the fact that women who marry later in life may be more inclined to have a first child soon after marriage.

Women who have ever used contraception are more likely to have longer durations from marriage to birth in comparison with other women. Traditional method use is also significantly associated with longer durations, although the strength of this relationship is considerably reduced compared to modern methods. In short, this analysis does confirm that the use of family planning methods is effective in promoting longer marriage to first birth intervals.

Results in Table 9 also show that women who are formally married and who are non-Muslim tend to have longer durations from marriage to first birth. The direction of these coefficients is not consistent with the differentials reported for these variables in Table 7. Additional results at variance with expectations established by the mean durations reported in Table 7 are that women resident in Luzon, Visayas, and Mindanao and women in middle and upper income households (40-60% and 60-80%) are more likely to have longer intervals from marriage to first birth.

Despite these unexpected findings, the role of education is still consistent with bivariate results and previous research findings. Women with more education tend to have shorter durations from marriage to first birth. In other words, once women who have spent more time in school finally marry, they tend to spend less time waiting to have their first child.

Among young adults (see Table 10), very few predictors prove to be important determinants of the interval from marriage to first birth. As was noted for all reproductive aged women, an increase in age and earlier initiation of sexual activity is associated with longer durations from marriage to first birth. The only additional significant determinant is education which again shows that more time in school (and

later age at marriage and start of childbearing) is associated with shorter intervals from marriage to first birth.

Premarital Conception

Factors associated with premarital conception are shown for all reproductive aged women in Table 9 and young adult women in Table 10. Since having a premarital conception is a dichotomous categorical variable, logistic regression is employed for this analysis rather than multiple regression.

Results indicate that younger women of reproductive age are more likely to have a premarital conception. For every single year increase in age, the odds of having a premarital conception fall by 3%. Interestingly, women who are consensually married and who initiate sexual activity at younger ages are not more inclined to conceive a child prior to becoming married.

Women who have ever used modern contraception are 26% more likely to have had a premarital conception compared to women who have never used any family planning method. Since women who have never used contraception may tend to be less sexually active, it may not be surprising that women who have used modern contraception are also more likely to report having a premarital conception.

Religious status is also an important determinant of premarital conception. Non-Muslim women are more likely to have a premarital conception. For example, Catholic women are 64% more likely and Protestant women 47% more likely to conceive a child before marriage compared to Muslim women.

In terms of residence status, premarital conceptions are significantly higher in urban areas. The odds of having a premarital conception are 19% greater in urban than rural areas. However, there are no significant regional variations in the odds of having a premarital conception.

More educated women are more likely to have premarital conceptions. For each single year increase in education, the odds of having a child that was conceived before marriage rises by 7%. Women with more education tend to marry later and therefore may be more exposed to the risk of unintended pregnancies that occur prior to marriage.

The household wealth index is an additional socioeconomic measure that appeared to have a systematic association with premarital conception in the bivariate results of Table 7. However, in the logistic regression model shown in Table 9, no statistically significant relationships are identified. Women from poorer households are not more likely to have premarital conceptions compared to women in wealthier households. The frequency of couple communication about family planning is also not significantly associated with the level of premarital conception among all women of reproductive age.

Findings for young adult women are generally quite similar to those reported for all women of reproductive age. Young adult women who are non-Muslim and who reside in urban areas are more likely to have a child conceived prior to marriage. However, the effect of age is not consistent with results for all women of reproductive age. Older young adult women are not more likely to have a premarital conception than younger (adolescent) women.

As was the case for all reproductive aged women, greater educational attainment among young adults is related to higher odds of having a premarital conception. For each single year increase in completed years of schooling, the odds of conceiving a child before marriage rise by 9%. Young adult women from wealthier households are also more likely to have premarital conceptions. Women from the poorest 20% of households are 64% less likely to have a premarital conception compared to women in the richest 20% of households.

Conclusions and Recommendations

This study examines trends and determinants in the initiation of family formation in the Philippines. Results show that the age at first marriage has not changed greatly between 1993 and 1998 (from 20.6 years of age in 1993 to 20.0 years of age in 1998). However, this analysis found that there is some evidence that non-legal marriages may now be

slightly more common.

There is little evidence of any significant change in the timing of first births between 1993 and 1998. The mean age at first birth rose slightly among legally married women (from 21.6 years in 1993 to 22.1 years in 1998), but there is no evidence of any change among non-legally married women. There appears to have been a significant rise in the age at first birth in Metro Manila and the Visayas, but modest declines elsewhere.

The average duration from marriage to first birth has not increased greatly between 1993 and 1998. In 1993, young adult women waited an average of 13.5 months to have their first child after marriage. By 1998, this figure had increased to 13.9 months. These trends, while not of great magnitude, do suggest that more couples are using contraception in order to space the arrival of their first child.

The percentage of births conceived before marriage (defined as live births occurring within seven months of marriage and children born prior to marriage) has declined from 21.5% in 1993 to 18.8% in 1998. The largest declines occurred among older women, in areas of Luzon outside Metro Manila, and among women who are legally married. This decline may be due to the greater use of contraception prior to marriage and/or recent declines in the level of premarital sexual activity. Somewhat more conservative reproductive behavior may very well be the outgrowth of more prominent worries about risks associated with the spread of sexually transmitted diseases, especially HIV/AIDS.

Multivariate results show that young adult women who use modern or traditional methods are more likely to delay having their first child. This result is especially notable among young adult women who have ever used a modern method. The provision of appropriate family planning services to young adult newlyweds would appear to be an effective intervention for providing more couples with the means to delay their first child.

Education is a powerful determinant of the age at first birth. Women with more schooling are far more likely to delay having their first child. It seems apparent that the promotion of more schooling for girls, especially at secondary and post secondary levels, could be expected to generate further gains in the age at first birth.

Young adults who initiate sexual activity at a later age have shorter intervals from marriage to first birth. This may be due to women marrying later in life being more inclined to have a child soon after marriage. However, a somewhat confounding finding is that the ever-use of contraception among young adults is not associated with longer intervals from marriage to first birth (while a significant positive effect is reported for all women of reproductive age).

Young adults who spend more time in school (and delay marriage and the start of childbearing) are also more likely to have longer intervals from marriage to first birth.

Births that were conceived prior to marriage tend to be more likely among non-Muslim young adult women and women with higher socioeconomic status. Greater educational attainment among young adults is positively associated with higher premarital conception. From these results, it is not clear to what extent young adults are out of school owing to a premarital conception or have conceived prior to marriage because they are already out of school. In addition, young adult women from wealthier households are also more likely to have premarital conceptions. Women from the poorest 20% of households are 64% less likely to have a premarital conception compared to women in the richest 20% of households. These patterns suggest that unmet need for family planning services is not confined to disadvantaged women from poorer socioeconomic settings.

NOTE

[1]This report is part of the secondary analysis project for the 1998 National Demographic and Health Survey. Ms. Tigno Vila is a Masters Degree candidate at the UP Population Institute (UPPI). Dr. Perez is Professor of Demography and former director of UPPI. She served as adviser for the project. The authors wish to acknowledge the technical assistance provided by Dr. Andrew Kantner, consultant for Macro International.

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WANTED FERTILITY AND UNMET NEED FOR FAMILY PLANNING AMONG YOUNG ADULTS IN THE PHILIPPINES

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EXECUTIVE SUMMARY

This analysis identifies factors associated with unwanted fertility in 1998 and unmet need for family planning between 1993 and 1998. As of 1998, the majority of currently married women (53.1) who gave birth in the five-year period prior to the 1998 NDHS (National Demographic and Health Surveys) said their child was unwanted at the time of delivery. Slightly more mothers (29.0%) said their births were mistimed while 24.1% simply did not want additional children. This high level of unwanted fertility implies that unmet need for family planning is still substantial in the Philippines.

As of 1998, 18.8% of all currently married had unmet need for family planning. Limiting unmet need (women who are not using contraception and do not want to have another child) is 10.6% and spacing unmet need (women who are not using contraception and do not want to have another child for at least two years) is 8.2%. The two surveys show that unmet need has declined substantially during the 1990s; namely, from 26.0% in 1993 to 18.8% in 1998.

Specific findings pertaining to unwanted fertility and unmet need for family planning are summarized below:

Unwanted Fertility. When controlling for other explanatory measures, unwanted fertility is found to be higher among young adult women (aged 15-24) than adult women (aged 25-49). Since younger Filipino women are increasingly likely to want to stay in school longer, earn income, and delay the start of families, it is understandable why they may report higher levels of unwanted fertility. On the other hand, higher parity births are also more likely to be unwanted, which suggests that unwanted fertility (and unmet limiting need) is also substantial among older women. In the Philippines, there is no significant difference in unwanted fertility by the gender of the child. Unlike several neighboring Asian countries, there is no evidence of substantial son preference among mothers.

The type of marital union has some influence on unwanted fertility. Women in legal marriages are more likely to have unwanted births than women living in consensual unions. This result may be due to greater acceptance of unplanned pregnancies (in part stemming from lower levels of family planning use) among women in consensual unions.

Unwanted fertility is significantly higher in urban areas and the Visayas region. Muslim women also have substantially more unwanted fertility. However, in the multivariate analysis of this study, there is no statistically significant difference in unwanted fertility between Mindanao (which is home to the country's main Muslim population) and Metro Manila.

Women with secondary levels of schooling are more likely to have unwanted fertility than women with primary and post-secondary educational attainment. In terms of household wealth status, poor and middle income women generally have more unwanted fertility compared to women from the richest 20% of households. This finding demonstrates that repro-

ductive behavior and health status are still highly skewed by the socioeconomic divides that still typify Philippine society.

The frequency of couple communication about family planning does not produce an anticipated result. Greater couple communication is associated with higher unwanted fertility, despite the fact that contraceptive use has been shown to be greater among couples with more frequent communication. As was hypothesized in the case of consensual unions, couples with less frequent communication may be more accepting of mistimed or high parity births than couples that are making more open (greater) effort to plan their families.

Measures of service provider contact generally have little effect on levels of unwanted fertility. For example, contact with family planning messages through various media channels are usually not important predictors; the only exception being the reading of family planning brochures, which tends to reduce unwanted fertility. In addition, visits from family planning fieldworkers and attendance at health facilities have no apparent impact on unwanted fertility. However, being resident in a LPP (Local Performance Program) province is associated with significantly lower unwanted fertility, a finding that implies that the LPP is making some progress in ensuring that all pregnancies result in wanted children.

Unmet Need for Family Planning. Young adult women in the Philippines have significantly higher unmet need for spacing methods compared to adult women. The Philippine family planning program is still not effectively reaching many young adult women in need of spacing services. Unmet limiting need is higher for adult women. In terms of total unmet need, young adult women are more disadvantaged compared to adult women–and have become relatively more disadvantaged between 1993 and 1998.

Women with more children are generally more likely to have unmet need (mainly unmet limiting need). As expected, spacing need declines among higher parity women. In addition, ideal family size measures are powerful predictors of unmet need; namely, larger family size ideals are associated with reduced need for contraception.

Women who are legally married are more likely to have unmet need for limiting methods, but there is little difference in spacing need between women with differing marital status. Religious status is also significantly linked to unmet need. Relative to Muslim women, the likelihood of having unmet need is lower among Catholics, Protestants, and women with other religious affiliations. This difference is mainly due to the considerably higher unmet need for spacing methods among Muslim women. The likelihood that Muslim women have greater unmet spacing need compared to other religious groups has not changed appreciably between 1993 and 1998.

This study found no significant variation in levels of unmet need (for either spacing and limiting methods) by region or urban/rural status. In other words, unmet need is uniformly high across much of the country. Given that there were significant variations in reported levels of unwanted fertility by region and urban/rural status, this finding is somewhat surprising.

Socioeconomic determinants of unmet need are identified in this study. As of 1998, educational attainment is not an important determinant of unmet need. However, if a woman is working, she is much more likely to have unmet need for spacing and limiting methods. This finding seems to demonstrate that many Filipino women view childbearing and formal employment to be somewhat incompatible.

Women from the poorest 20% of all households have a greater likelihood of needing contraception compared to women from the richest 20% of households. The poorest women are nearly as disadvantaged for both spacing and limiting methods comparised to the wealthiest women. However, there is evidence that poorer women are now more disadvantaged in relation to unmet limiting need. In general, the poor are underserved compared to the rich. Greater focus should be placed on providing services to the very poor as they are the members of society who can least afford to pay for family planning services and afford the expense of raising a child.

The frequency of couple communication has no effect on the level of unmet need in the Philippines. Since less frequent couple communication is associated with lower contraceptive use, one might have expected that unmet need would also be higher in this instance. However, the partner communication measure employed in this study has unanticipated effects on unwanted fertility and no predictive power in accounting for differences in unmet need.

As was the case with unwanted fertility, measures of service provider contact are generally weak predictors of unmet need. Contact with family planning messages through various media channels is not important in reducing levels of unmet need. This is an important finding for program administrators since it suggests that some reassessment of existing IEC (information, education, communication) strategies may be called for. Likewise, visits from fieldworkers appear to be ineffective as a means of reducing unmet need. Spacing need is significantly reduced if a woman reports having visited a health facility in the past 12 months, but limiting need seems largely impervious to health facility visitation. This is an important finding since it shows that there is substantial need for health facilities to strengthen their family planning services, especially for limiting methods.

As of 1998, residence in a LPP area reduces the likelihood of spacing need. The fact that this effect is not noted in 1993 may signify that LPP activities have been effective in reducing spacing need. However, LPP efforts appear to have done little to reduce the odds of having unmet limiting need in LPP versus non-LPP areas between 1993 and 1998.

Other Reproductive Health Services. A simple bivariate analysis comparing service utilization among young adult and adult women shows that young adults are greatly disadvantaged in the utilization of tetanus toxoid injections, iodine supplementation, pap smears, and breast examinations. Young adults fare better in iron supplementation coverage and postnatal advice on family planning and breastfeeding.

Introduction

In 1995, young adults between the ages of 15-24 constituted 20% of the total Philippine population of 75 million (NSO 1995). The Philippines continues to be characterized by a young age structure. This demographic feature presents special social and health care challenges for the country. Young people typically lack basic reproductive health information, skills in negotiating sexual relationships, as well as access to affordable, confidential reproductive health services. Their concerns about privacy, the ability to pay for care, and real or perceived disapproval by service providers further limit access to services (World Population Report 1999).

Findings from the 1994 Young Adult Fertility and Sexuality Survey (YAFS II) showed that 2.5 million Filipinos aged 15-24 have engaged in premarital sex. Seventy four percent of these (or 1.8 million) do not use any method to prevent pregnancy. Many teenage pregnancies result either in miscarriage, abortion or premature babies. The risk of maternal mortality is two to four times higher for pregnant adolescents than for pregnant women over the age of 20. Infant mortality is also greater among adolescent mothers–typically 30 percent higher for infants born to women aged 20 years or older (Herndon 1997). Unfortunately, existing welfare and development programs tend to neglect adolescents and young adults. Very few programs strategically respond to the needs of adolescents and young adults, thus they are at particular risk of reproductive ill-health.

The 1993 and 1998 Philippine National Demographic and Health Surveys (NDHS), which are nationwide sample surveys of women aged 15-49, provide information on levels and trends of fertility, family planning knowledge and use, infant and child mortality, and maternal and child health. These surveys, however, do not specifically analyze young adult reproductive health characteristics. Thus, this study aims to utilize 1993 NDS (National Demographic Survey) and 1998 NDHS data, giving equal

emphasis to two age groups: currently married young adults (aged 15-24) and currently married adult women (aged 25 and above). A comparison is made between the two groups in order to identify their unmet need for family planning and other reproductive health services.

Objectives of the Study

The main objectives of this study are to (1) identify determinants of wanted fertility among young adult women (aged 15-24) and adult women (aged 25 and above) in 1998; and (2) compare trends and determinants of unmet need for family planning among young adult women (aged 15-24) and adult women (aged 25 and above) between 1993 and 1998. Wanted fertility is an important corollary of unmet need in that women who are having unwanted children (either mistimed or not wanted at all) may tend to have higher unmet need for family planning services.

The utilization of other essential reproductive health interventions will be assessed. Comparisons are made between young adults and adult women pertaining to the utilization of other reproductive health services; specifically, tetanus toxoid immunization; iron and iodine supplementation; postnatal family planning, breastfeeding, and infant care advice; pap smears; and breast examinations.

In this analysis, unmet need for family planning is defined as follows:

Unmet Need for Spacing – The percentage of currently married women not using a method of family planning who want more children but who say they would like to space their next birth by at least two years;

Unmet Need for Limiting Methods – The percentage of currently married women not using any method of family planning who do not want any additional children;

Total Unmet Need – Total unmet need combines unmet spacing and unmet limiting need.

The study will address the following questions:

1. What are important socio-demographic characteristics of young adults among 1993 NDS and 1998 NDHS respondents?
2. What is the level of unwanted fertility among respondents in 1998?
3. Is there a difference in the incidence of unmet need for limiting, spacing and total unmet need among young adults compared to adult women?
4. What are the utilization patterns for other reproductive health services among young adults in 1998?
5. What individual, household and community factors are associated with unmet need?
6. What reproductive health-related factors are associated with unmet need?

Methodology

Data Sources

The sources of data for this study are the 1993 NDS and 1998 NDHS. The NDS interviewed 15,029 women in 1993 and 13,983 women in 1998. All of these women are in their prime reproductive ages of 15-49. Since this study focuses only on women who are either legally married or cohabiting, only 17,298 women are included in the analysis (see Table 1).

Table 1. Distribution of Respondents by Age*

Age	1993	1998	TOTAL
15-24	1408	1212	2620
25+	7554	7124	14678
TOTAL	8962	8336	17298

* Includes women who are either legally married or cohabiting

Individual, household and community variables are employed to assess the determinants of wanted fertility and unmet need for family planning (spacing,

limiting, and total unmet need). Independent variables employed in this analysis include current age of respondent, parity, region, type of residence, religion, education, employment status, the household wealth index, exposure to media, ideal family size, knowledge of ovulatory cycle (for unmet need only), frequency of family planning discussions with partner, number of visits by a family planning fieldworker in the past 12 months, frequency of visits to health centers in the past 12 months, and residence in a Local Performance Program (LPP) province.

A better understanding of wanted fertility and unmet need for spacing, limiting, and total unmet need can be gained by examining the significance of each variable when considered simultaneously. Put simply, one wants to know the influence of a particular variable while controlling for the effects of other independent variables. In other words, given various individual, household, and community characteristics, what is the probability that a woman will have a wanted child or unmet need for family planning?

The dependent variable is dichotomous; namely, whether a client has or does not have unmet need. A recommended analysis technique for studying a dichotomous dependent variable is binary logistic regression. Logistic regression is capable of handling a mixture of numerical and categorical variables. Assignment of reference categories is particularly important in the interpretation of the coefficients. In this analysis, the reference category is the category with the highest value.

The logistic regression model is fitted to the data as follows:

Logit P	= a + b1X1 + b2X2 + ...+ bkXk
where: P	= the probability of the reference child having had ARI or diarrhea
b1, b2...bk	= regression coefficients
X1, X2..Xk	= explanatory variables included in the model

Logistic regression output is presented in terms of the odds of change occurring in the dependent variable following upon a unit change in an explanatory (or independent variable). These odds are net of the effects of other explanatory factors introduced as part of an overall model that accounts for variance in the dependent variable.

This study is limited in several aspects. First, it is based solely on 1993 and 1998 NDHS data. Therefore, it only includes information from respondents who are either married or cohabiting. The NDHS is con-cerned primarily with marital fertility issues and is not an effective instrument for investigating the sexual behavior and fertility intentions of unmarried women. Second, this analysis has limited information on partners and families of the respondents.

Results and Discussion

Part one of this section presents findings for unwanted fertility in the Philippines. Part Two presents an analysis of spacing, limiting, and total unmet need as well as coverage levels for other reproductive health services.

Bivariate Analysis of Unwanted Fertility

As is shown in Table 2, a surprisingly high percentage of pregnancies in the Philippines are reported to be unwanted (owing to being mistimed or exceeding desired fertility). The 1998 NDHS reports that 53.1% of all births occurring in the 5 year period prior to interview were unwanted. Slightly more of these births are mistimed (29.0%) rather than limiting failures (24.1%). In any event, this high level of unwanted fertility implies that many Filipino women may be in need of family planning care. Background factors associated with wanted fertility are presented in Table 3.

Table 2. Percentage of Wanted and Unwanted Births among Currently Married Women*, 1998

Age	Frequency	Percent
Wanted	3545	46.9
Wanted Later	2191	29.0
Want No More	1824	24.1
TOTAL	7560	100.0

* Includes women who are either legally married or cohabiting

Bivariate results show that unwanted births appear to be lower among young adult women in the Philippines. Among all births five years prior to the 1998 NDHS, 48.5% are unwanted among young adults compared to 54.3% among adult women. As can also be seen in Table 3, unwanted births are more common if women already have many children (4 or more) and far less likely among lower order births, especially for a mother's first born offspring. These results imply that unmet need for limiting methods may be substantial in the Philippines.

The sex of the child does not appear to be highly correlated with unwanted births in the Philippines. Mothers report that 54.0% of all girls are unwanted at the time of delivery compared to 52.3% of boys. This finding suggests that there is little gender preference for children in the Philippines.

Muslim women and residents of Mindanao have higher levels of unwanted fertility. Among Muslim women, 62.2% of all births are unwanted compared to 52.5% among Catholics and 51.6% among Protestants. Women who live in consensual unions rather than being legally married are also less likely to have unwanted fertility (47.2% wanted among cohabiting women versus 53.8% among legally married women). This is a relatively small difference and may not prove to be significant in the multivariate analysis (see page 89).

Results in Table 3 suggest that women from higher socioeconomic status backgrounds tend to have lower unwanted fertility. For example, women with post-secondary education and who are from the richest 20% of households are less likely to have unwanted fertility. However, these differentials are not large. Somewhat contrary evidence is suggested by the fact that levels of unwanted fertility are roughly similar in urban and rural areas and among women who are employed or not working.

In terms of contact with service providers, there appears to be little consistent variation in unwanted fertility in relation to FP fieldworker visitation and attendance at health facilities in the past 12 months. Unwanted fertility is slightly lower among women living in a LPP province (where more extensive family planning and maternal care services are provided). However, this difference is again not substantial; namely, 51.8% of all births are unwanted in LPP areas versus 55.9% in non-LPP areas.

Somewhat surprisingly, more frequent couple communication about family planning does not appear to be associated with lower unwanted fertility. In fact, an opposite result is obtained. Among couples who never discuss family planning, 51.9% of all births are unwanted while among couples with frequent communication (more than once or twice) unwanted fertility is 55.1%.

Finally, there also appears to be little correlation between family planning information conveyed through various media channels and unwanted fertility. Unwanted fertility is actually slightly lower if women have not learned about family planning through radio, television, newspapers, posters and brochures. The multivariate analysis that follows will determine whether these unexpected differentials are statistically meaningful.

Determinants of Unwanted Fertility

Age. Multivariate results show that young adult women are 31% more likely to have unwanted births compared to adult women. This result may be partly due to the fact that adult women are more likely to be financially stable and living in secure relationships compared to younger women. Another possibility is prolonged schooling. Women nowadays are becoming more competitive professionally and would rather pursue degrees than settle down and raise children. Thus, young women, especially those who are still studying, may often want to wait until they are older to begin having children. Therefore, the odds are greater that they may have higher unwanted fertility

Sex of the Child. Bivariate results implied that girls might be slightly more unwanted than boys. However, the sex of the child is not statistically significant in Table 3, which reinforces the view that gender preference (at least among mothers) is not an important concern in the Philippines.

Parity. Results reveal that for every additional child, the likelihood of having an unwanted child increases by 28%. Put simply, this means that the more children a woman has, the less likely she will be to

Table 3. Percentage of Unwanted Births in Last Five Years, 1998 Philippine NDHS.

Variables	Frequency	Percent
Individual-Related Factors		
Age 15-24	1534	48.5
25 and above	6027	54.3
Sex of the Child		
Male	3970	52.3
Female	3591	54.0
Marital Status		
Legally Married	6517	53.8
Cohabiting	790	47.2
Region		
Other Luzon	3053	50.0
Visayas	1614	55.0
Mindanao	1845	56.2
Metro Manila	1048	54.0
Religion		
Catholic	6062	52.5
Protestant	537	51.6
Others	573	54.5
Islam	389	62.2
Type of Residence		
Urban	3463	53.2
Rural	4098	53.0
Education		
No Education	168	51.2
Primary	2584	52.7
Secondary	2908	55.5
Higher	1898	50.1
Employment		
Unemployed	4683	53.4
Employed	2872	52.6
LPP		
LPP Province	5181	51.8
Non-LPP Province	2380	55.9
Household Wealth Index		
Poorest 20%	1307	52.9
20-40%	1059	56.8
40-60%	1320	53.5
60-80%	1688	56.5
Richest 20%	1840	48.2

Variables	Frequency	Percent
Reproductive Health-Related Factors		
Parity		
0-1 Child	1095	25.7
2-3 Children	3174	50.6
4-5 Children	1798	62.6
6 and above	1492	67.2
Ideal Number of Children		
0-1 Child	165	54.5
2-3 Children	4112	51.8
4-5 Children	2589	55.3
6 and above	589	51.8
Visited by FP Worker		
No	6004	52.5
Yes	1555	55.5
Visited Health Facility		
No	2370	52.8
Yes	5187	53.2
Discussed FP with Partner		
Never	1106	51.9
Once or twice	3021	51.4
More often	3169	55.1
Heard FP on radio		
No	2430	51.2
Yes	5123	54.0
Seen FP on television		
No	2758	51.8
Yes	4797	53.9
Read about FP in newspaper		
No	4785	52.2
Yes	2769	54.7
Seen about FP on poster		
No	4390	52.1
Yes	3164	54.5
Seen about FP on brochure		
No	5155	51.5
Yes	2397	56.6

want an additional child. Women with larger families would clearly prefer to have fewer children, and this again suggests that unmet need for limiting methods is not insubstantial in the Philippines.

Marital Status. The odds of having unwanted fertility are 20% greater among women who are consensually married. These results suggest that women in consensual unions may be more accepting of the timing and arrival of their children compared to legally married women–who may attempt to plan the number and spacing of their children with more precision than women who are not legally married.

Region. Relative to women who live in the National Capital Region (NCR), women who are living in

Visayas are 28% more likely to have unwanted births. As was reported in Table 3, the level of unwanted fertility is also higher in Mindanao compared to Metro Manila. However, multivariate results failed to uncover a statistically significant difference between Mindanao and Metro Manila.

Type of Residence. In 1998, it was found that women who reside in urban areas are 14% more likely to have a wanted birth compared to women residing in rural places. This result suggests that many urban women would rather seek employment and earn income than have large families. In addition, migrants often comprise a large percentage of the women living in urban areas, especially Metro Manila. They may often move to urban areas with the hope of finding husbands and employment. Understandably, if their aim were finding employment, they would more likely want to delay having children and have smaller families. Therefore, more births might be expected to be unwanted in urban areas.

This situation is intensified by the higher cost of living in urban areas that tends to compel women to earn income. In other words, the focus is no longer on having children but on earning income. Women in rural areas may not be as assertive as urban women (especially urban migrants) when it comes to obtaining employment in the formal economic sector, and thus may be less inclined to use contraception.

Religion. In relation to Islamic women, the odds of having an unwanted child is considerably lower for women who are Catholic and Protestant. In 1998, the odds of having an unwanted child fell by 26% for Catholic women and 17% among Protestant women in comparison to Islamic women.

Education. In 1998, for every additional year of schooling, the likelihood of having an unwanted child rises by 5%. This finding is supported by the 1993 YAFS Survey which found that over 50% of young adults with no education or only have elementary or high school education, had begun childbearing, while fewer than 25% of all college-educated young adults had started having children. Since childbearing can curtail educational and occupational opportunities for women (Marini 1984, Klepinger et al. 1995 in Raymundo, et al. 1999), it is understandable why women with more education might be more inclined to have unwanted fertility. On the other hand, one could also hypothesize that more educated women have greater access to family planning services and greater knowledge about contraception and should therefore be better positioned to reduce their level of unwanted fertility.

Exposure to Media. Women who have heard about family planning in brochures are 20% less likely to have an unwanted child. As suggested by the bivariate findings in Table 3, other forms of media are not found to be significant predictors of unwanted fertility.

Discussion of Family Planning with Partner. The frequency of family planning discussion between partners has a significant impact on whether a child is wanted. The analysis for 1998 shows that women who never discussed family planning with their partners and who discussed it once or twice are less likely to have an unwanted birth compared to couples who discuss family planning more often.

These results are somewhat unexpected. The popular belief is that the more one communicates with a partner about family planning, the greater the likelihood that the birth will be wanted. However, if partners discuss family planning more often, they may know more about how to avoid an unwanted pregnancy. If a child is mistimed or unplanned, these couples may also be more inclined to report children as being unwanted. Couples with less family planning communication may be more accepting of the number and sequencing of their children as they arrive.

Local Performance Program. Women living in LPP areas are 27% less likely to have unwanted fertility. This result implies that the more intensive family planning program effort in LPP provinces may be having some impact on the timing and number of children women is having. However, since multivariate results are not presented for 1993, the extent to which unwanted fertility has changed in LPP and non-LPP areas cannot be ascertained.

Wealth Index. The household wealth index is a composite measure of household assets such as floor material, source of water supply, type of toilet, and

Table 4: Determinants of Unwanted Fertility (Births in the Last Five Years in the Philippines, 1998 NDHS

Independent Variables	1998 (Yes) EXP(B)
Age	
15-24	1.308*
25-49 (ref)	
Sex of Child	
Male	.983
Female (ref)	
Parity	1.282*
Marital Status	
Legal	1.203*
Consensual (ref)	
Region	
Other Luzon	.980
Visayas	1.278*
Mindanao	1.241
NCR (ref)	
Type of Residence	
Urban	1.142*
Rural (ref)	
Religion	
Catholic	.743*
Protestant	.728*
Others	.866
Islamic (ref)	
Education	1.053*
Heard FP Message on Radio (No)	.977
Seen FP Message on TV (No)	.919
Read FP Message in Newspaper (No)	.949
Seen FP Message on Poster (No)	1.044
Seen FP Message on Brochure (No)	.801*
Discussed FP with Partner	
Never Discussed	.826*
Discussed Once/Twice	.854*
Discussed More Frequently (ref)	
Visited by FP Worker Last 12 Months (Yes)	.987
Visited Health Facility Last 12 Months (Yes)	1.001
Currently Employed (Yes)	1.113
Living in LPP Area (Yes)	.730*
Household Wealth Index	
Poorest 20%	1.267
20-40%	1.476*
40-60%	1.286*
60-80%(4)	1.396*
Richest 20% (ref)	

* p <= .05

whether households have a radio, television, refrigerators, bicycle, motorcycle, and electrification. In general, unwanted fertility is higher in poorer households. For example, women in the poorest 20% of households are 27% more likely to have unwanted fertility compared to women in the richest 20% of households.

An explanation for this result seems apparent: more children tend to generate greater household expense. Women who are richer can better afford to raise children, thus births are more likely to be welcomed. Poor and middle class women may be more inclined to limit or space births as they are unsure of the kind of future they can provide their children. It may be worth noting that women in the poorest 20% of households are somewhat less likely to have unwanted fertility compared to women from middle-income households. The popular belief that more children may mean more help coupled with the notion that children will take care of parents in their old age may be some of the motivating factors for poorer women to want more children despite their disadvantaged economic status.

Bivariate Analysis of Unmet Need for Family Planning

Independent variables employed in this analysis are either individual or reproductive health related. Individual related factors include age, marital status, region, religion, type of residence, education, employment, residence in a LPP area, and the household wealth index. Reproductive health related measures include parity, knowledge of the ovulatory cycle, ideal family size, visits by health workers in the past 12 months, visits to health facilities in the past 12 months, discussion of family planning with partner, and exposure to media.

The overall level of unmet need for family planning has declined in the Philippines between 1993 and 1998. In 1993, total unmet need was 26.0% among all currently married women. By 1999, this figure fell to 18.8%. Spacing need has declined more rapidly than limiting need. However, in 1998, unmet limiting need is 10.6% compared to just 8.2% for women with spacing need.

As shown in Tables 6a-6c, unmet need for spacing is higher among young adults compared to adult women–28.0% versus 9.5% in 1993 and 21.4% versus 5.9% in 1998. However, limiting need among young adults is half the level reported for adult women (6.5% versus 14.8% in 1993 and 6.9% versus 11.2% in 1998).

Unmet need for spacing and limiting is higher among women who are living consensually compared to those who are legally married. Among the legally married, spacing need fell from 12.0% in 1993 to 7.7% in 1998, while among cohabiting women spacing need fell to 12.5% in 1998 from 16.4% in 1993. Limiting need among legally married women in 1993 is 13.1% while it is 17.8% among cohabiting women. In 1998, unmet need for limiting fell by 3 percentage points among the legally married, while it fell by 5 percentage points among women who are living consensually.

Results show that women in Mindanao are most disadvantaged, with one in every ten currently married women having unmet spacing need. Not so far behind are women in areas of Luzon outside Manila (8.5%). On the other hand, limiting need is highest among women in Visayas (13.2%).

Unmet spacing need is greater among Islamic women. In 1993, it was as high as 23.9%. By 1998, spacing need among Muslim women fell to 21.4%, a decline of only 3 percentage points. Among women who are Catholic, Protestants, and those with other religious affiliation, spacing need is only around 7-8% in 1998. Minimal differences can be observed in unmet need for limiting in terms of religion. In 1998, limiting need is 9.0% among Protestant women, 10.9% among Catholic women, 10.6% among Islamic women, and 8.8% among women from other religious affiliations. Unmet limiting need fell most rapidly among Protestant women between 1993 and 1998.

Unmet need for spacing and limiting tends to be higher among women residing in rural areas. In 1998, spacing need among women in rural areas was 9.4% compared to 7.0% among women in urban areas. Limiting unmet need was somewhat higher; namely, 12.6% for rural women and 8.6% for urban women. Both spacing and limiting need declined between 1993 and 1998, with spacing need falling somewhat more rapidly (5 percentage points in both urban and rural areas) than limiting need (2-3 percentage points in both urban and rural areas).

Education is another factor associated with unmet need for spacing and limiting. Spacing need is highest among women with no formal education. In 1993, unmet spacing need among uneducated women was 18.5%. It fell to 13.6% in 1998. It is worth noting that in 1998 spacing need among women with no education is twice as high as unmet need among women who at least had primary educaation.

Unmet spacing need among women who are unemployed is double the level recorded by employed women. This finding is consistent for both 1993 and 1998. Similarly, unemployed women are more likely to have limiting need compared to women who are employed. In 1993, limiting need was 14% among unemployed women and 12% among the employed. In 1998, the incidence

Table 5. Spacing, Limiting, and Total Unmet Need for Family Planning among Currently Married Women*, 1993 and 1998

	1993 (N = 8955[a])		1998 (N = 8336)	
	Frequency	Percent	Frequency	Percent
Unmet Spacing	1113	12.4	682	8.2
Unmet Limiting	1211	13.5	881	10.6
Total Unmet Need	2324	26.0	1563	18.8

* Includes women who are either legally married or cohabiting.
[a] Excludes missing cases.

of limiting need fell by around 2 percentage points, irrespective of women's employment status.

Residence in a LPP province does not appear to be associated with lower unmet need. Total unmet need is nearly identical when contrasting LPP and non-LPP areas. Differences in spacing and limiting need are also modest, with there being some evidence of higher spacing need in LPP areas and higher limiting need in non-LPP areas.

Unmet need for spacing is highest among women belonging to the poorest 20% of households. In 1998, 11.8% of women living in the poorest 20% of households had unmet spacing need, compared to only 5.2% among women in the richest 20% of households. As was the case with unmet spacing need, limiting need is highest among women belonging to the poorest 20% of households. Results also show that limiting need is higher among women living in middle-income households compared to the richest 20% of households. In other words, the poorer the household, the more likely it will be that women have unmet spacing and limiting need.

A close inspection of parity reveals that spacing need is more common among women with smaller families while limiting need is higher among women with large families. Unmet spacing need among women with one child or less is approximately three times higher compared to women with four to five children (21.0% versus 7.0% in 1993 and 15.6% versus 5.1% in 1998). On the other hand, women with 0-1 children have modest limiting need (2.7% in 1993 and 2.9% in 1998). These figures are considerably lower than among women with two to three children (10.2% in 1993 and 9.9% in 1998). Among women with six children or more, unmet limiting need is 21.5% in 1998.

In 1998, only 13.8% of all respondents have correct knowledge about when they are at greatest risk of becoming pregnant during their ovulatory cycle. Since many women in the Philippines rely upon natural family planning methods that require accurate information about the timing of ovulation and conception risk, this high figure is disturbing. Unmet need for family planning is somewhat greater for women without accurate knowledge about their ovulatory cycles. As of 1998, spacing need is 8.4% and limiting need 11.0% for women without correct knowledge (compared to 7.0% and 8.3% respectively for women with accurate information).

In general, there is little difference in unmet need for spacing or limiting by ideal family size in either 1993 or 1998. The one exception is unmet spacing need in 1998, where women who want large families (six or more) have higher spacing need. Women who want much smaller families tend to be using contraception more readily, and therefore have lower levels of unmet need.

In terms of visitation by a family planning worker in the past 12 months, there is little variation in spacing and limiting need. In 1998, spacing need is slightly higher among those not visited (8.5% versus 6.6%). On the other hand, there is hardly any difference in limiting need between women who were visited by a FP worker and those who were not (10.4% versus 11.6%).

Somewhat surprisingly, unmet need for spacing among women who visited a health facility in the past 12 months is roughly 2 percentage points higher compared to women who do not visit a health facility (8.9% versus 7.2% in 1998). Additionally, there is barely any difference in limiting need when contrasting women who visited a health facility with those who did not (10.6% versus 10.5%). One might have anticipated that contact with health facilities would be associated with substantially lower unmet need for family planning.

In 1998, women who never discussed family planning with their partners have unmet spacing need of 8.9%. On the other hand, women who discussed family planning with their partners have an 8.0% unmet spacing need, regardless of the frequency of discussion. There is also hardly any difference in limiting need among women who discussed family planning with their partners and those who did not. This result is also somewhat unexpected since more frequent couple communication about family planning tends to be associated with greater use.

Unmet need for spacing and limiting tends to be somewhat lower among respondents who have heard messages about family planning through various media channels (radio, television, newspapers, posters, and brochures). For both spacing and limiting need, learning about family planning through television appears to be most clearly asso-

Table 6a. Unmet Need for Spacing

Variables	1993 Frequency	Percent	1998 Frequency	Percent
Individual-Related Factors				
Age				
15-24	1407	28.0	1210	21.4
25 and above	7568	9.5	7169	5.9
Marital Status				
Legally Married	8208	12.0	7442	7.7
Cohabiting	780	16.4	872	12.5
Region				
Other Luzon	4856	11.8	3447	8.5
Visayas	1811	12.2	1647	6.8
Mindanao	2137	13.9	1940	10.0
Metro Manila	147	15.0	1297	6.4
Religion				
Catholic	7388	12.1	6714	7.7
Protestant	268	8.2	582	7.9
Others	975	11.8	635	6.3
Islam	343	23.9	369	21.4
Type of Residence				
Urban	4623	11.4	4229	7.0
Rural	4309	13.6	4106	9.4
Education				
No Education	238	18.5	169	13.6
Primary	3578	11.6	2753	7.7
Secondary	3067	13.5	3045	8.8
Higher	2078	11.5	2355	7.6
Employment				
Unemployed	5095	15.8	4415	10.6
Employed	3825	8.0	3926	5.4
LPP				
LPP Province	6200	12.5	5628	7.8
Non-LPP Province	2726	12.4	2700	9.0
Household Wealth Index				
Poorest 20%	2277	17.3	2078	11.6
20-40%	1955	13.2	1844	9.0
40-60%	1714	10.5	1661	5.6
60-80%	1531	9.6	1449	6.9
Richest 20%	1244	8.6	1077	5.2
Reproductive Health-Related Factors				
Parity				
0-1 Child	1795	21.0	1872	15.6
2-3 Children	3155	14.2	3149	7.4
4-5 Children	2171	7.0	1922	5.1
6 and above	1827	7.5	1429	4.2
Knowledge on Ovulatory Cycle				
Knows Ovulatory Cycle	2464	11.2	1314	7.0
Doesn't know Ovulatory Cycle	6488	12.9	7024	8.4
Ideal Number of Children				
0-1 Child	208	12.0	188	3.2
2-3 Children	4947	13.1	4537	8.2
4-5 Children	2991	11.4	2844	7.7
6 and above	719	12.1	637	11.3
Visited by FP Worker				
No	n.a.	n.a.	6835	8.5
Yes	n.a.	n.a.	1530	6.6
Visited Health Facility				
No	n.a.	n.a.	3444	7.2
Yes	n.a.	n.a.	4876	8.9
Discussed FP with Partner				
Never	n.a.	n.a.	1865	8.9
Once or twice	n.a.	n.a.	3238	8.0
More often	n.a.	n.a.	3200	8.0
Heard FP on radio				
No	5062	12.9	2607	8.9
Yes	3898	11.8	5684	7.9
Seen FP on television				
No	6115	13.0	2713	10.1
Yes	2838	11.1	5589	7.3
Read FP in newspaper				
No	n.a.	n.a.	4774	9.3
Yes	n.a.	n.a.	3537	6.7
Seen FP on poster				
No	n.a.	n.a.	4545	8.8
Yes	n.a.	n.a.	3760	7.5
Seen FP on brochure				
No	n.a.	n.a.	5382	8.9
Yes	n.a.	n.a.	2971	6.8

Table 6b. Unmet Need for Limiting

Variables	1993 Frequency	Percent	1998 Frequency	Percent
Individual-Related Factors				
Age				
15-24	1400	6.5	1217	6.9
25 and above	7561	14.8	7116	11.2
Marital Status				
Legally Married	8183	13.1	7495	10.3
Cohabiting	781	17.8	872	12.5
Region				
Other Luzon	4848	13.8	3439	10.7
Visayas	1814	14.5	1636	13.2
Mindanao	2139	12.2	1939	9.9
Metro Manila	148	11.5	1293	8.2
Religion				
Catholic	7387	13.7	6734	10.9
Protestant	267	14.6	589	9.0
Others	975	12.0	636	8.8
Islam	344	12.5	368	10.6
Type of Residence				
Urban	4642	12.0	4233	8.6
Rural	4331	15.1	4111	12.6
Education				
No Education	240	14.6	168	14.3
Primary	3563	17.6	2755	14.7
Secondary	3084	11.9	3067	9.0
Higher	2080	8.7	2365	7.4
Employment				
Unemployed	5104	14.4	4379	11.6
Employed	3837	12.3	3916	9.5
LPP				
LPP Province	6237	13.5	5609	11.0
Non-LPP Province	2726	13.5	2694	9.8
Wealth Index				
Poorest 20%	2275	17.8	2067	16.4
20-40%	1953	14.9	1845	11.0
40-60%	1715	13.0	1655	8.7
60-80%	1538	9.3	1462	7.8
Richest 20%	1239	9.2	1078	5.1
Reproductive Health-Related Factors				
Parity				
0-1 Child	1815	2.7	1897	2.9
2-3 Children	3147	10.2	3152	9.9
4-5 Children	2174	16.1	1908	10.9
6 and above	1825	26.9	1419	21.5
Knowledge on Ovulatory Cycle				
Knows Ovulatory Cycle	2453	12.8	1325	8.3
Doesn't know Ovulatory Cycle	6500	13.8	7018	11.0
Ideal Number of Children				
0-1 Child	207	15.0	186	14.5
2-3 Children	4930	12.8	4567	10.4
4-5 Children	3000	13.7	2832	10.1
6 and above	719	17.1	636	11.8
Visited by FP Worker				
No	n.a.	n.a.	6788	10.4
Yes	n.a.	n.a.	1517	11.6
Visited Health Facility				
No	n.a.	n.a.	3462	10.6
Yes	n.a.	n.a.	4886	10.5
Discussed FP with Partner				
Never	n.a.	n.a.	1870	11.5
Once or twice	n.a.	n.a.	3224	10.7
More often	n.a.	n.a.	3210	10.0
Heard FP on radio				
No	5056	14.2	2606	10.4
Yes	3874	12.7	5701	10.7
Seen FP on television				
No	6080	15.0	2705	12.9
Yes	2846	10.4	5600	9.5
Read FP in newspaper				
No	n.a.	n.a.	4793	11.6
Yes	n.a.	n.a.	3553	9.2
Seen FP on poster				
No	n.a.	n.a.	4545	12.1
Yes	n.a.	n.a.	3761	8.8
Seen FP on brochure				
No	n.a.	n.a.	5359	11.7
Yes	n.a.	n.a.	2965	8.6

Table 6c. Total Unmet Need

Variables	1993 Frequency	Percent	1998 Frequency	Percent
Individual-Related Factors				
Age				
15-24	1409	34.5	1212	28.3
25 and above	7564	24.3	7135	17.1
Marital Status				
Legally Married	8195	25.1	7478	18.0
Cohabiting	781	34.2	869	25.1
Region				
Other Luzon	4871	25.5	3461	19.1
Visayas	1813	26.7	1643	19.9
Mindanao	2138	26.1	1940	19.9
Metro Manila	148	27.0	1295	14.6
Religion				
Catholic	7388	25.8	6762	18.5
Protestant	268	22.8	586	16.9
Others	971	23.9	634	15.3
Islam	344	36.3	369	32.0
Type of Residence				
Urban	4632	23.4	4231	15.6
Rural	4321	28.7	4109	22.0
Education				
No Education	238	33.2	169	27.8
Primary	3568	29.2	2759	22.4
Secondary	3079	25.4	3056	17.8
Higher	2084	20.2	2367	15.0
Employment				
Unemployed	5103	30.2	4401	22.2
Employed	3833	20.3	3919	14.9
LPP				
LPP Province	6223	26.0	5617	18.8
Non-LPP Province	2726	25.9	2711	18.7
Wealth Index				
Poorest 20%	2276	35.1	2071	28.0
20-40%	1957	28.1	1845	20.0
40-60%	1719	23.5	1657	14.3
60-80%	1534	18.9	1456	14.7
Richest 20%	1242	17.8	1088	10.2
Reproductive Health-Related Factors				
Parity				
0-1 Child	1797	23.7	1866	18.6
2-3 Children	3152	24.4	3132	17.4
4-5 Children	2178	23.0	1913	16.0
6 and above	1826	34.4	1420	25.7
Knowledge on Ovulatory Cycle				
Knows Ovulatory Cycle	2458	24.0	1322	15.2
Doesn't know Ovulatory Cycle	6494	26.7	7021	19.4
Ideal Number of Children				
0-1 Child	208	27.4	186	17.7
2-3 Children	4953	25.8	4554	18.6
4-5 Children	2984	25.2	2821	17.9
6 and above	719	29.2	635	23.0
Visited by FP Worker				
No	n.a.	n.a.	6810	18.9
Yes	n.a.	n.a.	1522	18.2
Visited Health Facility				
No	n.a.	n.a.	3455	17.8
Yes	n.a.	n.a.	4862	19.5
Discussed FP with Partner				
Never	n.a.	n.a.	1859	20.5
Once or twice	n.a.	n.a.	3235	18.7
More often	n.a.	n.a.	3223	17.9
Heard FP on radio				
No	5059	27.1	2606	19.3
Yes	3886	24.5	5730	18.5
Seen FP on television				
No	6132	28.0	2709	23.0
Yes	2842	21.5	5629	16.7
Read FP in newspaper				
No	n.a.	n.a.	4789	20.9
Yes	n.a.	n.a.	3535	15.9
Seen FP on poster				
No	n.a.	n.a.	4545	20.9
Yes	n.a.	n.a.	3778	16.2
Seen FP on brochures				
No	n.a.	n.a.	5369	20.6
Yes	n.a.	n.a.	2961	15.4

Table 7. Comparison of Young Adult and Older Women Coverage Levels for Reproductive Health Interventions, 1998

Independent Variables	15-24 Frequency	Percent	25 & above Frequency	Percent
Tetanus Toxoid Vaccination*				
Yes	649	44.9	3380	58.5
No	795	55.1	2398	41.5
Iron Supplementation*				
Yes	1029	71.1	4407	75.7
No	419	28.9	1417	24.3
Iodine Supplementation*				
Yes	719	49.8	3305	57.1
No	725	50.2	2488	42.9
Family Planning Advice*				
Yes	311	39.1	1617	46.3
No	484	60.9	1876	53.7
Breastfeeding Advice				
Yes	541	68.1	2453	70.1
No	254	31.9	1047	29.9
Infant Care Advice				
Yes	579	72.8	2572	73.4
No	216	27.2	934	26.6
Pap Smear*				
Yes	128	8.8	1037	17.7
No	1325	91.2	4818	82.3
Breast Examination				
Yes	422	29.0	1840	31.4
No	1032	71.0	4016	68.6

* $p <= .05$

ciated with lower unmet need. In 1998, spacing need was 10.1% for women who had not seen family planning messages on television (compared to 7.3% among women with television contact) and limiting need was 12.9% for women not viewing FP messages (and 9.5% among women with contact). However, these differences are still small and may prove to be insignificant in a multivariate context.

Table 7 provides information on the utilization of essential reproductive health services for young adult and adult women. Results show that young adults are generally disadvantaged in terms of tetanus toxoid injections, iron and iodine supplementation, breast examinations, pap smears, and obtaining family planning advice during postnatal visits.

According to findings from the 1998 NDHS, 44.9% of young adult women receive tetanus toxoid injections during pregnancy as compared to 58.5% of adult women. In terms of iron and iodine supplementation, young adults don't fare as badly. For example, 71.1% of young adults receive iron supplementation during pregnancy compared to 75.7% of adult women.

During the postnatal period, young adults obtain roughly the same level of breastfeeding and infant care advice as adult women, However, considerably fewer young adults are provided with family planning advice (39.1% compared to 46.3%). On the other hand, both young adult and adult women are underserved with regard to pap smears and breast examinations. Only 8.8% of young adult women report having had a pap smear and just 29.0% have had breast examinations (corresponding figures for adult women are 17.7% and 31.4% respectively).

Multivariate Analysis

Individual, household and community variables are employed to assess the determinants of unmet need for family planning (spacing, limiting, and total unmet need) in 1993 and 1998. Independent variables employed in this analysis are similar to the measures presented in the previous bivariate analysis.

Determinants of unmet need for spacing, limiting, and total unmet need are presented in Table 8. Not all variables available in the 1998 NDHS were available in the 1993 NDS; namely, media contact

Table 8: Determinants of Unmet Need for Family Planning (Spacing, Limiting, and Total) in the Philippines, 1993 and 1998

Independent Variables	Unmet Spacing 1993 Exp(B)	Unmet Spacing 1998 Exp(B)	Unmet Limiting 1993 Exp(B)	Unmet Limiting 1998 Exp(B)	Unmet Total 1993 Exp(B)	Unmet Total 1998 Exp(B)
Age						
15-24	2.236*	2.556*	.693*	.888*	1.846*	2.053*
25-49 (ref)						
Parity	.863*	.848*	1.329*	1.270*	1.133*	1.118*
Marital Status						
Legal	.917	.796	.644*	.770*	.710*	.740*
Consensual (ref)	-	-	-	-	-	-
Region						
Other Luzon	.707	1.263	1.125	1.019	.911	1.114
Visayas	.670	.954	.921	1.097	.810	1.056
Mindanao	.672	1.047	.772	.768	.727	.877
NCR (ref)	-	-	-	-	-	-
Type of Residence						
Urban	.979	.952	1.013	.946	.989	.934
Rural (ref)	-	-	-	-	-	-
Religion						
Catholic	.479*	.415*	.831	.716	.623*	.523*
Protestant	.260*	.414*	.946	.623	.504*	.485*
Others	.459*	.304*	.728	.594*	.561*	.405*
Islamic (ref)	-	-	-	-	-	-
Education	1.021	1.015	1.081	1.013	1.025*	1.017
Heard FP Message on Radio (No)	.989	.883	1.008	.906	1.001	.888
Seen FP Message on TV (No)	.982	1.080	1.186	.944	1.094	.992
Read FP Message in Newspaper (No)		1.208		.879		1.021
Seen FP Message on Poster (No)		.848		1.209		1.023
Seen FP Message on Brochure (No)		1.172		1.111		1.151
Discussed FP with Partner						
Never Discussed		1.000		1.174		1.132
Discussed Once/Twice		.951		1.062		1.017
Discussed More Frequently (ref)		-	-	-	-	-
Ideal Family Size	1.016	1.047*	.857*	.838*	.973	.958*
Correct Knowledge of Ovcycle (Yes)	.947	.866	.967	.885	.945	.870
Visited by FP Worker Last 12 Months (Yes)		1.205		.971		1.081
Visited Health Facility Last 12 Months (Yes)		.752*		1.016		.890
Currently Employed (Yes)	1.719*	1.460*	1.277*	1.199*	1.528*	1.330*
Living in LPP Area (Yes)	.997	.789*	.876	.895	.905	.836*
Household Wealth Index						
Poorest 20%	2.350*	2.107*	1.719*	2.604*	2.221*	2.543*
20-40%	1.487*	1.527*	1.421*	1.754*	1.554*	1.719*
40-60%	1.416*	1.081	1.291*	1.410	1.412*	1.264
60-80%	1.101	1.376	.842	1.463	.964	1.457*
Richest 20% (ref)	-	-	-	-	-	-

* p <= .05

measures for newspapers, posters, and brochures as well as service contact information for FP workers and health facilities. Therefore, results are not strictly comparable between the two time periods.

Determinants of Unmet Need for Family Planning

Age. As noted in the bivariate results for unmet need, there is considerable variation in patterns of spacing and limiting need by age of the respondent. In 1998, young adults (ages 15-24) are 156% more likely to have unmet need for spacing compared to adult women aged 25-49. This finding clearly demon-strates that many younger women in the Philippines would like to use contraception to better time the arrival of their children, but currently are not using contraception for this purpose.

Unmet need for limiting is more common among older reproductive aged women. In 1998, young adult women are 11.2% less likely to have unmet need for limiting compared to adult women. Young adult women do not need to limit births as they are still starting to have families of their own. Adult women, on the other hand, already have reached their desired family size so they are more likely to want to stop childbearing.

In terms of total unmet need, young adult women are far more likely to be underserved. The odds that young adult women will have total unmet need (spacing plus limiting) are 105% greater compared to adult women. Between 1993 and 1998 these odds have risen from 85% to 105%, which indicates that young adult women may have become relatively more disadvantaged in relation to adult women.

Parity. The number of children ever born (measured as a continuous variable) is significantly related to unmet need for spacing and limiting. In 1998, the odds of having for spacing need by 15% with each additional child while the odds of having limiting need rises by 27% with each additional child. There is very little change in these patterns between 1993 and 1998. Total unmet need tends to be higher among women with more children; a result that is largely due to the fact that total limiting need is higher than total spacing need (see Table 2). As previously noted, unwanted fertility is higher among mothers with more children, which may partly account for the rise in unmet need for family planning with a rise in parity.

Marital Status. Results from 1998 show that women who are legally married are 36% less likely to have unmet need compared to women in consensual unions. These improved odds are largely due to the reduced likelihood of having limiting need. The likelihood of having limiting need is 23% lower among women who are legally married, which demonstrates that women in consensual unions appear to be less well served with limiting methods. As can be seen in Table 8, there is no significant difference in unmet spacing need by marital status.

Region and Type of Residence (Urban/Rural Status). While there were notable differentials in unmet need by region and urban/rural status in the bivariate analysis tables, these effects are not significant predictors of unmet need in the multivariate environment of Table 8. This result is somewhat surprising in that the level of unwanted fertility was noted to be significantly higher in urban areas and in the Visayas region.

Religion. Religious status is an important determinant of unmet need. In 1998, the odds of having spacing need are 59% lower among Catholic and Protestant women compared to Muslim women. Women belonging to these religious affiliations also have significantly lower unwanted fertility compared to Muslim women. However, there is no systematic variation in limiting need in 1993 or 1998. The strong religious effects for spacing and total unmet need, and the lack of any significant relationships for island of residence and urban/rural status, highlights the importance of ethnic and cultural characteristics in guiding reproductive behavior.

Education. Education as measured by the number of completed years of schooling is a surprisingly weak predictor of unmet need. An examination of 1993 results shows that the odds of having total unmet need rose by 3% for each single year increase in the number of years of completed schooling. However, in 1998, education is not significantly associated with spacing, limiting, or total unmet need. The relatively

weak influence of education on unmet need may be partly due to the high level of schooling acquired by most Filipino women.

IEC Media Contact. Family planning messages delivered through radio, television, newspapers, posters, and brochures do not have any systematic association with spacing, limiting, and total unmet need. If IEC were highly effective, one might have expected to find that greater FP/IEC media contact should be associated with lower unmet need. However, at least based upon results from the 1993 NDS and 1998 NDHS, such relationships cannot be discerned.

Frequency of FP Discussion with Partner. Also somewhat contrary to expectation, the frequency of couple communication about family planning (never, once/twice, and more often) is not an important determinant of unmet need for family planning. This result is somewhat unexpected in that the frequency of couple communication has been shown to be an important determinant of contraceptive use (e.g., see Laguna et al. 2000).

Ideal Family Size. Women who report higher ideal family size tend to have lower unmet need for family planning. With each additional child reported as ideal, the odds of having total unmet need decline by 4%. Higher ideal family size is particularly notable among women with limiting need. The likelihood of having limiting need falls by 14% for each additional child considered to be ideal. While women who have higher family size ideals are less likely to want to limit childbearing, they are also more likely to want to space their children more effectively. For each additional ideal child, spacing need increases by 5%.

Contact with Service Providers. Visits by family planning fieldworkers in the last 12 months are not significantly related to levels of unmet need for spacing and limiting. However, women who have attended a health facility in the past 12 months are 25% less likely to have spacing need. The odds of having limiting method need are not significantly influenced by contact with a health facility. This finding suggests that clinic-based service providers may be meeting with more success in supplying reversible spacing methods than permanent limiting methods of contraception.

Employment. In 1998, non-working women are 46% more likely to have unmet spacing need compared to women who were working. Non-working women may tend to be less well educated, poorer, and residing in rural areas, and may therefore be less likely to utilize family planning and other reproductive health services. Women who are not working are also 28% more likely to have limiting need than women who are working. Respondents who are not working may tend to feel that they cannot afford more children and would rather rely upon permanent family planning methods. However, they may not be able to afford an additional child, which implies that limiting need could be expected to be higher.

Local Performance Program (LPP). In 1998, the likelihood of having unmet need for spacing in Local Performance Program (LPP) provinces is 21% lower compared to non-LPP provinces in 1998. One implication of this finding is that LPP initiatives may be having an impact in providing reversible methods of contraception. However, unmet need for limiting is largely impervious to residency in an LPP area. In that there were no significant effects for LPP when examining 1993 NDS results, there is little basis for concluding that LPP activities have played a role in reducing spacing need between 1993 and 1998.

Wealth Index. The wealth index is a significant covariate for unmet need for spacing. In 1998, relative to women in the richest 20% of households, unmet need for spacing is higher by 111% among women residing in the poorest 20% of households. There is also a significant difference in limiting need among women from different wealth categories. Women who belong to the poorest 20% of households are 160% more likely to have unmet limiting need compared to women from the richest 20% of households. Clearly, women from the poorest 20% of households are in a disadvantaged position. Furthermore, middle class women are also deprived compared to women from the richest 20% of all households.

Table 8 also presents evidence that poorer women are less well served by limiting methods in 1998 than in 1993. The odds of having limiting need have actually risen from 72% to 160% among women from the

poorest 20% of households between 1993 and 1998. This substantial rise in the likelihood of having limiting need among poorer women may be indicative of growing inequity in the delivery of family planning care in the Philippines.

Conclusions

This analysis identifies factors associated with unwanted fertility in 1998 and unmet need for family planning between 1993 and 1998. As of 1998, the majority of currently married women (53.1) who gave birth in the five-year period prior to the 1998 NDHS said their child was unwanted at the time of delivery. Slightly more mothers (29.0%) said their births were mistimed while 24.1% simply did not want additional children. This high level of unwanted fertility implies that unmet need for family planning services is still substantial in the Philippines.

Evidence from the 1993 NDS and 1998 NDHS shows that unmet need for family planning is still quite high in the Philippines. As of 1998, 18.8% of all currently married had unmet need for family planning. Limiting unmet need (women who are not using contraception and do not want to have another child) is 10.6% and spacing unmet need (women who are not using contraception and do not want to have another child for at least two years) is 8.2%. The two surveys show that unmet need has declined substantially during the 1990s; namely, from 26.0% in 1993 to 18.8% in 1998.

Specific findings pertaining to unwanted fertility and unmet need for family planning are summarized below:

Unwanted Fertility. When controlling for other explanatory measures, unwanted fertility is found to be higher among young adult women (aged 15-24) than adult women (aged 25-49). Since younger Filipino women are increasingly likely to want to stay in school longer, earn income, and delay the start of families, it is understandable why they may report higher levels of unwanted fertility. On the other hand, higher parity births are also more likely to be unwanted, which suggests that unwanted fertility (and unmet limiting need) is also substantial among older women. In the Philippines, there is no significant difference in unwanted fertility by the gender of the child. Unlike several neighboring Asian countries, there is no evidence of substantial son preference among mothers.

The type of marital union has some influence on unwanted fertility. Women in legal marriages are more likely to have unwanted births than women living in consensual unions. This result may be due to greater acceptance of unplanned pregnancies (in part stemming from lower levels of family planning use) among women in consensual unions.

Unwanted fertility is significantly higher in urban areas and the Visayas region. Muslim women also have substantially more unwanted fertility. However, in the multivariate analysis of this study, there is no statistically significant difference in unwanted fertility between Mindano (which is home to the country's main Muslim population) and Metro Manila.

Socioeconomic status is clearly associated with variations in unwanted fertility. Women with secondary levels of schooling are more likely to have unwanted fertility than women with primary and post-secondary educational attainment. In terms of household wealth status, poor and middle income women generally have more unwanted fertility compared to women from the richest 20% of households. This finding demonstrates that reproductive behavior and health status are still highly skewed by the socioeconomic divides that still typify Philippine society.

The frequency of couple communication about family planning does not produce an anticipated result. Greater couple communication is associated with higher unwanted fertility, despite the fact that contraceptive use has been shown to be greater among couples with more frequent communication. As was hypothesized in the case of consensual unions, couples with less frequent communication may be more accepting of mistimed or high parity births than couples that are making more open (greater) effort to plan their families.

Measures of service provider contact generally have little effect on levels of unwanted fertility. For example, contact with family planning messages

through various media channels are usually not important predictors; the only exception being the reading of family planning brochures, which tends to reduce unwanted fertility. In addition, visits from family planning fieldworkers and attendance at health facilities have no apparent impact on unwanted fertility. However, being resident in a LPP province is associated with significantly lower unwanted fertility, a finding that implies that the LPP is making some progress in ensuring that all pregnancies result in wanted children.

Unmet Need for Family Planning. Young adult women in the Philippines have significantly higher unmet for spacing methods compared to adult women. The Philippine family planning program is still not effectively reaching many young adult women in need of spacing services. Unmet limiting need is higher for adult women. In terms of total unmet need, young adult women are more disadvantaged compared to adult women and have become relatively more disadvantaged between 1993 and 1998. In 1993, the odds that a young adult woman would have unmet need were 85% greater than adult women. By 1998, these odds had risen to 105%.

Women with more children are generally more likely to have unmet need (mainly unmet limiting need). As expected, spacing need declines among higher parity women. In addition, ideal family size measures are powerful predictors of unmet need; namely, larger family size ideals are associated with reduced need for contraception.

Women who are legally married are more likely to have unmet need for limiting methods, but there is little difference in spacing need between women with different marital status. Religious status is also significantly linked to unmet need. Relative to Muslim women, the likelihood of having unmet need is lower among Catholics, Protestants, and women with other religious affiliations. This difference is mainly due to the considerably higher unmet need for spacing methods among Muslim women. The likelihood that Muslim women have greater unmet spacing need compared to other religious groups has not changed appreciably between 1993 and 1998.

This study found no significant variation in levels of unmet need (for either spacing and limiting methods) by region or urban/rural status. In other words, unmet need is uniformly high across much of the country. Given that there were significant variations in reported levels of unwanted fertility by region and urban/rural status, this finding is somewhat surprising.

Socioeconomic determinants of unmet need are identified in this study. As of 1998, educational attainment is not an important determinant of unmet need. However, if a woman is working, she is much more likely to have unmet need for spacing and limiting methods. This finding seems to demonstrate that many Filipino women view childbearing and formal employment to be somewhat incompatible.

Household wealth status is also an important determinant of unmet need. Women from the poorest 20% of all households have a 154% greater likelihood of needing contraception compared to women from the richest 20% of households. The poorest women are nearly as disadvantaged for both spacing and limiting methods in comparison to the wealthiest women. However, there is evidence that poorer women are now more disadvantaged in relation to unmet limiting need. In 1993, women from the poorest 20% of households were 72% more likely to have unmet limiting need compared to the richest 20%. By 1998, this figure had increased to 160%. In general, the poor are underserved compared to the rich. Greater focus should be placed on providing services to the very poor as they are the members of society who can least afford to pay for family planning services and afford the expense of raising a child.

The frequency of couple communication has no effect on the level of unmet need in the Philippines. Since less frequent couple communication is associated with lower contraceptive use, one might have expected that unmet need would also be higher in this instance. However, the partner communication measure employed in this study has unanticipated effects on unwanted fertility and no predictive power in accounting for differences in unmet need.

As was the case with unwanted fertility, measures of service provider contact are generally weak predictors of unmet need. Contact with family planning messages through various media channels is not important in reducing levels of unmet need. This is an important finding for program administrators since it suggests that some reassessment of existing IEC strategies may be called for. Likewise, visits from fieldworkers appear to be ineffective as a means of reducing unmet need. Spacing need is significantly reduced if a woman reports having visited a health facility in the past 12 months, but limiting need seems largely impervious to health facility visitation. This is an important finding since it shows that there is substantial need for health facilities to strengthen their family planning services, especially for limiting methods.

As of 1998, residence in a LPP area reduces the likelihood of spacing need. The fact that this effect is not noted in 1993 may signify that LPP activities have been effective in reducing spacing need. However, LPP efforts appear to have done little to reduce the odds of having unmet limiting need in LPP versus non-LPP areas between 1993 and 1998.

Other Reproductive Health Services. A simple bivariate analysis comparing service utilization among young adult and adult women shows that young adults are greatly disadvantaged in the utilization of tetanus toxoid injections, iodine supplementation, pap smears, and breast examinations. Young adults fare better in iron supplementation coverage and postnatal advice on family planning and breastfeeding.

NOTE

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