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Utilization of Formal Services for Maternal Nutrition and Health Care in the Third World

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INTRODUCTION

The special health risks posed to women by the biological processes of reproduction are the most obvious, although not the only reason that a gender disaggregated approach is appropriate in studies of adult morbidity and mortality in the developing world. The health risks associated with reproduction affect virtually all women at some point in their lives. While there has been a steady decline in fertility levels throughout the developing world, the average number of children per woman in 1985 was still 3.8, with national averages as high as 7.9. When we consider that still-births, miscarriages, and abortions are not included in these figures, the average number of pregnancies per woman is clearly significantly higher. At any given time, among women of reproductive age in developing countries (excluding China) approximately one in six is pregnant, compared with only one woman in seventeen in industrialized countries. (Sivard 1985)

In most cases, fortunately, pregnancy and childbirth are normal, healthy events, requiring a minimum of intervention by specialized health care providers. In spite of this, however, chronic ill health and malnutrition associated with pregnancy and lactation, as well as life threatening emergencies associated with childbirth and unsafe abortion, are major causes of morbidity and mortality among women in developing countries. At least one-fourth, and in some countries as many as one-half, of all deaths of women of childbearing age result from causes related to pregnancy and childbirth (Herz and Measham 1987; Starrs 1987). This means that almost half a million women a year die from pregnancy related causes in the developing world (WHO 1987a). Millions more suffer a severely impaired quality of life as a result of short term and long term disability and malnutrition related to pregnancy and childbirth (Merchant and Martorell, forthcoming; Liskin 1988; Favin, Bradford, and Cebula 1984).

Increased and improved coverage of nutrition and health services could probably have a greater impact in reducing the morbidity and mortality associated with pregnancy and childbirth than on other causes of illness and death in developing countries (Herz and Measham 1987; Key 1987; Rosenfield and

Maine 1985). An analysis of the causes of maternal mortality in nine selected low income developing countries suggested that 60 to 80 percent of childbirth related deaths and 88 to 98 percent of all maternal deaths could have been avoided if proper services had been available (Maine 1986). This study found that, invariably, delayed identification of high risk cases and a shortage of medical supplies had paved "the road to death." The International Safe Motherhood Conference held in February 1987 in Nairobi, Kenya, highlighted these facts and recommended several action plans to bring about a world-wide revolution in maternal nutrition and health similar to the child survival and development revolution (Herz and Measham 1987; Starrs 1987). The main thrust of the recommendations was to maximize the coverage of existing health services with a minimal increase in infrastructural costs.

A widely cited editorial in *The Journal of Tropical Pediatrics* in 1982 called attention to the serious inadequacy of coverage of maternal care, particularly childbirth care, in developing countries. The editorial estimated that not more than a third of pregnant women in developing countries received any formal prenatal care, and that not more than one fifth of all births occurred under medical supervision (Ebrahim 1982). It is being increasingly recognized that not only supply factors, but also demand factors are responsible for the inadequate coverage of maternal care in developing countries (Maine et al. 1986, Pelto 1987, Chen 1986). While concurring completely with those calling for an increase in the availability of appropriate, affordable, maternal nutrition and health care services (Koblinsky and Corbett 1987, Herz and Measham 1987), our focus in this paper is on the relatively more neglected issue of factors affecting demand for maternal care in the Third World.

The purpose of this paper, which provides a review of economic, sociological, and anthropological research on utilization of maternal nutrition and health care in developing countries, is to increase our understanding of when and why women make use of formal services during

pregnancy, childbirth, and the postnatal period.[1] It is hoped that an improved understanding of the determinants of demand for maternal nutrition and health care will help policy makers and program planners and managers design more acceptable and effective interventions to protect and promote the health and nutritional status of women in the developing world.

[1] Formal services for nutrition and health care is taken to encompass institutionalized, usually Western, health care in developing countries. Care provided by both government and non-government organizations is included, but the use of traditional health care, whether self care in the home or provided by traditional practitioners, is not covered in this study. (Pillsbury and Brownlee 1989). While it is recognized that nutrition and food supplementation programs form a significant part of maternal services, very little reference is made in the available research to the factors affecting the utilization of these programs by pregnant and lactating women. Therefore, the discussion of the factors in the utilization of formal maternal services principally refers to prenatal, childbirth and postnatal care. Prenatal services refer to any preventive (educational or high-risk surveillance) or acute/curative health services provided to pregnant women. Childbirth services refer to the actual delivery of the infant and any medical interventions that may be necessary immediately following. For the sake of convenience, services provided to postpartum and lactating women are jointly discussed as postnatal services. (A description of services provided by formal maternal nutrition and health care can be found in Williams, Baumslag, and Jelliffe 1985). For the most part, this review is specifically based on studies of the determinants of the utilization of maternal services, although occasionally more general research on utilization of primary health care is included.

PROVISION OF MATERNAL CARE

For many decades, maternal and child health (MCH) services have been included as a main component of health and development programs in the Third World. Maternal and child health services, however, have almost without exception been biased towards child health, with maternal health care perceived as important primarily because of the direct biological link between mother and child. Thus, mothers have been included as beneficiaries of MCH educational, medical, and nutritional programs mainly because they are viewed as a vehicle to improve child health and survival. (Howard 1987)

Most maternal and child health services have been designed as if whatever services are beneficial to the child will also benefit the mother. In fact, both the causes and the remedies for child morbidity or mortality are quite different from those for maternal morbidity or mortality (Rosenfield and Maine 1985). The major causes of child illness and mortality are infectious diseases and malnutrition, whereas major causes of maternal morbidity and mortality are obstetric complications (such as obstructed labor, toxemia and hemorrhage) and reproductive infections (such as sexually transmitted diseases) as well as malnutrition (particularly anemia) and other infections. Among the main strategies currently promoted to reduce child morbidity and mortality (the standard child survival package of oral rehydration therapy, immunization, family planning, growth monitoring, and breastfeeding), only family planning, and to some extent breastfeeding, directly benefit the mother.

The relative neglect of maternal health seems all the more misguided given the key role that women play, both economically and socially, in ensuring the well-being of their families. The tragedy of maternal morbidity and mortality goes beyond the untimely and unnecessary death or suffering of the woman herself. It has consequences for her family, her community, and ultimately the socioeconomic development of her country. It is known that newborn infants fare particularly poorly when their mothers die. One study from Bangladesh reported that 95 percent of the children of such mothers died within one year of their mother's death (Chen et al. 1974). A healthy mother who has the physical and emotional resources to give birth to and bring up a

healthy child is, in fact, laying the foundation for a healthy start for the next generation of mothers and children (Winikoff 1987). Maternal nutrition and health, therefore, would seem to be a key entry point to ensure that the cycle of ill-health and malnutrition in developing countries is broken.

A maternal death or serious maternal disability also means a loss of resources for the family, since the vast majority of women of childbearing age help to support the family through agricultural or income generating work. Moreover, increasingly large numbers of women throughout the developing world are the sole heads of their households. (Youseff and Hetler 1984). They bear the full responsibility of both earning income to support, and caring for their families. In such instances, the loss of a mother often means the breakdown of an entire family unit (Koblinsky and Corbett 1987; Herz and Measham 1987). Thus, the problem of maternal morbidity and mortality in developing countries needs to be urgently dealt with not only for humanitarian reasons, but also to ensure economic growth, social stability, and the health and development of future generations.

While the focus of this paper is on maternal health, it is important to recognize that maternal health is only a part of a larger issue, that of women's health (Stinson 1986). There are increasing numbers of women in developing countries whose health needs will not be met by services that focus only on reproductive health needs (Buvinic and Leslie 1981). Pre-pubescent girls are often the victims of ill-health and neglect that can undermine any benefit of good health passed on to them by healthy mothers. This can then put them at a disadvantage well before the childbearing cycle gets started (Winikoff 1987). Similarly, women who are past their childbearing years are increasingly vulnerable to poor health and may need medical assistance either for ailments that are long-term results of complications of pregnancy and childbirth or for other acute and chronic illnesses unrelated to their reproductive role. Such women are often highly productive members of their community contributing to income and non-income generating activities within and outside the home and their health and nutrition needs should be given a prominent place in health care plans (Hawkes, O'Connell, and Blurton Jones 1987).

In addition, even within the more narrow focus on women's reproductive health needs, there are large groups of women with critical health needs that are not being met by existing MCH or family planning services. These include young unmarried women who want to practice contraception but are not considered appropriate target groups for family planning services, women with unwanted pregnancies who want to terminate their pregnancies, and women with sexually transmitted diseases (Germain 1987). Thus, while this review focuses on maternal nutrition and health care, we wish to emphasize that if the inter-generational cycle of health and well-being is to be kept in motion, and if the goals of Health for All by the Year 2000 are to be realized, women of all ages, regardless of their reproductive status, need to be provided with effective, appropriate nutrition and health care services.

Coverage of Prenatal, Childbirth, and Postnatal Care

A review of the demand for primary health care (including maternal care) in selected countries based on data from the 1970's found that only about 30 percent of births in Africa and about 45 percent of births in Latin America and Asia were attended by modern practitioners--defined to include physicians, nurses, and midwives (Akin et al. 1985, Table 2.16). The authors of this review noted that much of the data on coverage of prenatal and childbirth care were based on urban samples, and that, in the few cases where statistics from the rural sector were available, coverage was much lower so that the cited figures probably represent an overestimation of the coverage of maternal care for that period.

More recently published statistics suggest that there has been some improvement in coverage of maternal care during the 1980's (Royston and Ferguson 1985). However, changes over time are difficult to establish with confidence, given the incomplete and frequently unreliable statistics available from most developing countries and the different definitions used of "modern practitioners" or "trained personnel" in estimating coverage of formal health services. In 1985, the World Health Organization's Division of Family Health undertook the first systematic, worldwide review of the coverage of maternal care (WHO 1985; Royston and Ferguson 1985). This review found considerable information available concerning coverage of childbirth services,

less concerning prenatal care, and very little concerning postnatal care. Overall, WHO estimated that, as of the mid 1980s, 48 percent of births in developing countries were attended by trained personnel (defined to include physicians, nurses, midwives, primary health care and other workers, and trained traditional birth attendants). There were substantial differences among regions, and even larger differences between particular countries within regions: an average of 34 percent of births were reported as attended by trained personnel in Africa and Oceania, 49 percent in Asia, and 64 percent in Latin America.[2]

Given the more limited number of countries for which statistics (particularly national level statistics) on coverage of prenatal care were available and the lack of confidence in the reliability of the information that was available, WHO did not attempt to calculate regional averages for coverage of prenatal care, as they had done for childbirth care. (The working definition used in the WHO review was that a woman was considered to have received prenatal care if she was seen at least once by a trained attendant during pregnancy. The nature of that visit or the quality of care provided during that visit were not included as defining variables.) However, the country-specific data revealed that there were large differences between countries in coverage of prenatal care. All regions had countries that reported very high rates of coverage of prenatal care (over 80 percent of pregnant women in the Gambia, Columbia, and the Philippines, for example) and other countries that reported very low rates (fewer than 25 percent of pregnant women in Nigeria, Uruguay, and Afghanistan for example). However, on average, based on the meagre data available, coverage of prenatal care appeared to be higher in South America and in the Caribbean than in other parts of the developing world (WHO 1985).

It is interesting to note that in cases where statistics on coverage of both prenatal and childbirth care are available for a particular country, the percentage of women receiving prenatal care is almost invariably higher than

[2] It is interesting that in at least one study from Ogun State, Nigeria, it was found that official government statistics underestimated rather than overestimated the number of births attended by trained personnel. Taylor (1984) reported that state data for 1978 show 40 percent of all births to have taken place in hospitals or rural maternity centers, whereas a community based study showed the true percentage to be closer to 70 percent.

the percentage of women attended by trained personnel during childbirth (Royston and Ferguson 1985). Higher rates of coverage of prenatal than childbirth services have also been reported from a number of project specific studies. Such differences are most likely to reflect different patterns of utilization of prenatal and childbirth services rather than differences in availability of services. Researchers who undertook a study in two regions of rural Ghana, where both prenatal and childbirth services were readily available, noted that only about 20 percent of all births were supervised by trained personnel, while 80 percent of mothers received prenatal care (de Kadt and Segall 1981). A study of traditional and modern medicine in Malaysia described the resistance of both the *bidan kampung* (traditional Malay birth attendants) and the community to the introduction of trained midwives, specifically noting that while many pregnant women were quite willing to attend the prenatal clinic offered by the trained midwife, more than half of those who attended the prenatal clinic still chose the *bidan kampung* for delivery (Chen 1981).

As far as coverage of postnatal care by trained personnel is concerned, the data are extremely limited and frequently contradictory. In Jamaica, for example, one source reports that 71 percent of urban women and 70 percent of rural women receive postnatal care (Akin et al. 1985), whereas the WHO review reports that only 37 percent of women in Jamaica receive postnatal care (WHO 1985). As with prenatal and childbirth care, significant differences among countries in coverage of postnatal care are reported, ranging from 75 to 80 percent of pregnant women in China, Malaysia and the Philippines to less than 10 percent in Costa Rica and Madagascar (WHO 1985). Overall, as well as in specific countries, coverage of postnatal care seems to be significantly lower than either prenatal or childbirth care. A recent study in Ecuador, for example, found that 29 percent of pregnant women receive prenatal care, 17 percent of deliveries are attended by a physician (physicians represent the majority of trained health personnel in Ecuador), but only 4.5 percent of women who give birth receive postnatal care (Ruffing and Smith 1984). In summary, statistics on coverage of maternal care make it clear that while the majority of women in developing countries still receive no formalprenatal, childbirth, or postnatal care, relatively speaking, the coverage of prenatal care is the highest and the coverage of postnatal care is the lowest, with the

coverage of formal childbirth services falling in between.

Supply of Health Personnel

A key factor determining the availability of maternal nutrition and health care services is the number of trained health professionals available in a country. The ratio of physicians or nursing personnel (usually defined to include midwives) to population provides the most widely available and, therefore, the most comparable measure across countries of the availability of health care. While there are certain exceptional countries, overall the availability of trained health personnel is closely correlated with the level of economic development of a country. In countries designated by the World Bank as low-income (excluding China and India), in 1981 there was one physician for every 17,670 people and one nurse for every 7,130; in lower middle-income countries, the ratio of physicians was one per 7,880 people and of nurses was one per 1,760; in upper middle-income countries the ratio was one physician per 1,380 people and one nurse per 900 (World Bank 1988).

Of particular significance, as far as maternal care is concerned, is the availability of nurses and midwives. In general, not only are there more nurses and midwives than physicians in developing countries, but also the level of availability of nursing personnel seems to be less variable across regions. In East, Central, and West Africa, where the availability of physicians is lowest, there is one physician for every 15,000 people; in North Africa, Southern Africa, East Asia, and South West Asia there is one physician for every 2000 people; and in Latin America and the Caribbean the physician to population ratio is at least one per 1500 (Williams, Baumslag, and Jelliffe 1985). However, as far as nurses and midwives are concerned, except for South Central Asia, where the ratio of nursing personnel to population is fewer than one per 4000, the range is much narrower: from one nurse or midwife per 2500 people in East Africa to approximately one per 500 in the Caribbean (Williams, Baumslag, and Jelliffe 1985). The relative availability of physicians and nurses, therefore, is quite different from region to region. In South Central Asia and in Latin America, at one extreme, there are approximately equal numbers of nurses or midwives and physicians, (although at quite different

overall levels of availability of health personnel) whereas, in Africa, at the other extreme, there are as many as six to ten nurses per physician.[3] Different strategies for provision of formal maternal care will need to be designed depending on the relative availability of physicians and nursing personnel in each country.

Uneven Distribution of Services

Disparities in availability of health personnel and provision of health services among countries are compounded by striking inequalities in distribution of personnel and services within countries. The greater availability of all types of health care in urban than in rural parts of most developing countries is a well recognized problem.

Rural/urban disparities have been specifically noted in several studies of coverage of maternal care. One particularly detailed study of childbirth in Piaui State in Brazil found that, in the city of Teresina, 75 percent of births took place in a hospital or government health center, compared with 42 percent in the interior of the state (Morris et al. 1981). In fact, Akin and colleagues report that, for countries where statistics on both urban and rural populations were available, urban coverage of maternal care was always higher (Akin et al. 1985).

The disparity between rural and urban areas in actual provision of maternal care may frequently be greater than is apparent from official statistics on distribution of services, given the greater likelihood that rural positions will be unfilled. In Nepal, for example, while 60 percent of assistant nurse midwives (ANMs) are assigned to rural health posts, only about 30 percent of the rural positions actually have an ANM working in them at any given time (Justice 1984).

[3]It is interesting to compare the situation in developing countries with that in Europe and North America (where there are, on average, slightly over three nurses or midwives per physician). In industrialized countries, nurses and midwives are primarily employed as support staff to physicians; however, in developing countries they frequently occupy positions of considerably greater responsibility and autonomy.

While there is fairly widespread recognition of the serious inadequacy of health and nutrition services in rural areas, less attention has been paid to the lack of, and inequitable distribution of, services within urban areas. In spite of greater availability of services in urban than rural areas, a large number of urban residents in developing countries do not receive the care that they need. Hospitals tend to be removed (physically and socially) from the urban poor, particularly the recent arrivals who frequently live in outlying shanty towns (Rossi-Espagnet 1987). In addition, given the rapid population growth rates in urban centers and economic recession in many countries, hospitals tend to be increasingly overcrowded and to lack even the most basic supplies.

Traditional Providers of Maternal Care

In concluding this overview of coverage of maternal care in the Third World, it is essential to clarify that the statistics on coverage of maternal care discussed above include only services provided by the formal health care system. In most developing countries, there is an additional source of health care available to mothers: the indigenous, traditional health care system. There is substantial data to show that both systems of health care are in use today in most developing countries, and that even in areas where formal health services are readily available, the traditional system of health care continues to play a crucial role in the provision of maternal care (Freund 1986; Kroeger 1983; Pillsbury 1979). Although a thorough review of the role of traditional maternal care is outside the scope of this paper, we feel it is important to briefly identify the different sources of traditional care and to recognize that formal services could supplement rather than completely substitute for it.[4]

The two main sources of traditional maternal care are first, traditional practitioners who hold specialized knowledge (*viz.* healers, herbalists, and

[4]A detailed review of the literature on traditional maternal care, both beliefs and practices, is provided in "Household and Community Beliefs and Practices that Influence Maternal Health and Nutrition" (Pillsbury and Brownlee 1989).

traditional midwives) and second, female family members or experienced women in the community (WHO 1987b). While the first source of traditional maternal care is widely recognized, the second is largely ignored. There is evidence from several countries, however, to show that a large proportion of births are attended by a friend or a relative rather than by a traditional birth attendant. [India (Bhende 1983), Kenya, Southwestern Nigeria (Maine et al. 1986)]. One of the most extreme examples is Nepal, where it is estimated that only about 10 percent of women receive any kind of non-family provided health care during pregnancy or childbirth, including care provided by *sudhenis* or *dhais* (traditional Nepali birth attendants) (Justice 1984).

Both sources of indigenous maternal care, whether provided by community and family elders or by more institutionalized practitioners, could, with the modification of harmful practices and a reliable referral system, constitute a safe alternative for many normal, uneventful pregnancies (Starrs 1987). Given the budgetary restrictions faced by most developing countries, and the preference shown by many women for home births, a realistic and economical way of increasing coverage and lowering risk would be to supplement and support indigenous care with regular medical surveillance, good referral services, and appropriate community health and nutrition education.

UTILIZATION OF MATERNAL CARE: SERVICE FACTORS

We have found it useful to divide our analysis of the patterns of demand for maternal nutrition and health care services into two sections based on locus of control or change.[5] Variables that can be viewed as primarily associated with the service delivery system or facility are designated as service factors, and are discussed in this section. Variables that can be viewed as primarily associated with the circumstances and characteristics of the client are designated as user factors, and are discussed in the following section. This perspective leads to a consideration of two quite different types of interventions to increase utilization of maternal care services: those that focus on modifying the functioning and organization of the service, and those that focus on modifying the resources, perceptions, or decision making processes of the user. The implications of our findings for program design, as well as specific areas where more research is needed, are presented in the final section of the paper.

The service factors related to utilization that are discussed in this section range from physical aspects of the service (such as availability and accessibility) through costs of using the service (analyzed both in terms of direct monetary costs and time costs) to the quality of the care provided (which includes efficacy of treatment, availability of supplies, and characteristics and attitude of personnel). It should be noted here that, while the focus of this section is on characteristics of the service rather than on characteristics of the user, an attempt is made to look at the effect of service factors on utilization both from an organizational perspective, and from the perspective of the user. This dual perspective is essential in order to identify which service factors have the most significant effect on demand, and which are most amenable to change.

[5]Kroeger (1983) identifies two general models of service utilization behavior: pathway models and determinant models. Pathway models are defined as those that describe the different stages of the decision making process in chosing a particular type of health care. Determinant models, on the other hand, focus on a set of explanatory variables or determinants of utilization. For the purposes of this paper, the ultimate goal of which is to increase utilization rather than simply describe the process of health seeking behavior, a determinant model seemed more useful.

Availability and Accessibility

The distinction between availability and coverage of a service, implied but not explicitly discussed in the preceding section, needs to be underlined. Coverage is achieved only when a service is actually utilized, not just when it is available and accessible. Therefore, availability and accessibility can be seen to be necessary but not sufficient to ensure coverage. They are the first steps towards utilization.

The availability of a health service refers mainly to its physical presence, whereas accessibility reflects the extent to which care can actually be obtained when required (Schach, Kalimo, and Haythorne 1976). For example, a government maternity clinic may be eight kilometers away from a village that is completely lacking in transportation services. While statistics may list that clinic as an available source of maternal care in reality the difficulty of accessing the clinic may render it completely inaccessible. Availability and accessibility are such closely related concepts that it seemed best to discuss them together. In the literature reviewed the two terms are sometimes used interchangeably and almost always in conjunction with each other.

There are two major components of accessibility: physical and social. The latter refers to social customs or practices that may create barriers to the use of a modern health service even when it is physically accessible. For example, the Muslim and Hindu custom of purdah may prevent women from using a maternal care service operated by male functionaries or in some societies, a woman from a particular caste may perceive a maternal service as inaccessible if it is used by women from another caste. More frequently, however, the term "accessibility" has been used to refer to the physical and organizational dimensions of use. Such a restricted definition will be maintained here. Social accessibility will be discussed in the sub-section on sociocultural factors in the following section of the paper.

Distance

The key component of physical accessibility is distance. This has, in fact, been the most researched deterrent to health facility use. A main

determinant of the user's subjective assessment of distance (and one that is directly linked with distance) is the availability and convenience of appropriate transportation. In many studies, therefore, the cost of transportation and the time costs to make the journey to the health services are also included in a discussion on accessibility. In this paper, however, the latter two variables are discussed separately in the following sub-section on affordability.

There is substantial evidence from a wide range of countries across the globe that the distance that patients must travel in order to obtain treatment is a primary deterrent in the utilization of health care facilities in general, and of maternal services, in particular [for example, Bangladesh (Chowdhury 1986; Rahman 1981), Côte d'Ivoire (Lasker 1981), Egypt (Kane et al. 1988), India (Bhende 1983; Misra 1983), Kenya (Voorhoeve, Kars, and van Ginneken 1984), Mexico (Potter 1985), Nigeria (Attah 1986; Stock 1983), Pakistan (Schmidt 1983), Philippines (Schwartz, Akin, and Popkin 1986; Mangay-Angara 1981), and Zaire (Duale et al. 1988)]. In fact, most patients do not travel far to use a health service. In Tanzania, for example, 50 percent of the patients at a government hospital and 37 percent of the patients at a private hospital had traveled less than nine miles (van Etten 1972). In Afghanistan, 90 percent of a village health worker's patients walked less than 30 minutes to seek care (O'Connor 1980, cited by Akin et al. 1985). In addition clients seem to be less willing to travel long distances for preventive than for curative services. It has been found that, for the most part, people use preventive services only when they are available within a three to five kilometer walk of where they live (Favin, Bradford, and Cebula 1984). Distance has also been noted as a deterrent to utilization of supplementary feeding services. An evaluation of a supplementary feeding program in India, which targeted both preschool age children and pregnant and lactating women, reported that being more than five kilometers from the distribution center was negatively associated with participation (Rao and Vijayaraghawan, 1976 cited in Hamilton, Popkin, and Spicer, 1984).

The distance factor is especially significant in Third World settings where the density of modern health facilities is low, where the majority of patients are likely to make the journey on foot, and where there are

accessible alternate sources of indigenous medicine. There is data to indicate that health care facilities in most developing countries effectively cover only a relatively small area surrounding the facility. One study in rural Nigeria reported that utilization of health facilities declined exponentially with distance, creating what the author called a distance decay effect (Stock 1983). Distance is one of the major reasons cited for the lack of success of formal health services in Ethiopia. In a discussion of the shortcomings of Ethiopian health services, Ayalew (1985) observes that the technology of health services adopted in the past were based on models developed by industrial nations. Because these models were expensive, wide coverage through numerous health units was not affordable. As a result, today, for the majority of Ethiopia's population, the nearest health unit is at least three days away on foot. Thus, a lack of accessibility is the chief cause for the underutilization of health services in Ethiopia.

Nevertheless, distance per se may not always be the best predictor of utilization because of the effect of several intervening variables. The most significant of these are the nature of the road or terrain, the ease with which it can be covered, and, as mentioned above, the availability of transportation. Difficult terrain, plus distances to be covered of up to ten kilometers were reported to be the main impediments to the use of a primary health center by rural and tribal women of Andhra Pradesh in India (Ramalingaswami 1987). In rural Mexico, the type of road was shown to be a significant predictor of timely prenatal check-ups and of use of institutionalized delivery (Potter 1985). Specifically, in Mexico, the existence of a "good" road (that is one in which at least a significant portion was paved) between the community and the town was associated with a 30 percent increase in the relative odds of a woman having had a timely prenatal examination by a physician and a hospital based delivery.

Limited access to medical facilities because of poor roads and a lack of transportation were also reported in studies from Zaire (Duale et al. 1988) and the Imo State of Nigeria (Attah 1986). In India, heavy rain and other poor weather conditions have been reported to reduce accessibility even further (Misra 1983). In the Philippines inadequate transportation coupled with unfavorable climatic conditions hindered the full utilization of

available services (Mangay-Angara 1981). Thus, reducing the distance to a health facility may not be sufficient to increase accessibility and thereby utilization, because often the unavailability of transportation, poor weather conditions, and impassable terrain may make even short distances unmanageable.

Distance appears to be a somewhat less significant factor in urban than in rural areas. Data from the Philippines have shown that, in rural areas, distance was a key predictor of the timing of the first prenatal visit to a health facility while in urban areas this was not so (Wong et al. 1987). Moreover, another study from the Philippines showed that increased distance to a child delivery facility in rural areas reduced its usage, while in urban areas this relationship was not statistically significant (Schwartz, Akin, and Popkin 1986). The researchers attributed these rural-urban differences to the fact that in urban areas distances between clients and health facility were not high enough to be determinants of choice in the type of health care used, and because transportation facilities were superior in urban areas.

An analysis of the data of the one study that seemingly contradicts the relationship between greater distance and lower utilization, in fact, further emphasizes the importance of taking into consideration intervening variables. A study of a family health clinic in Nigeria reported that clients who lived farther away from the clinic tended to attend the clinic more often than those who lived close by (Freeman et al. 1983). However, a closer look at the data revealed that this was because the people who lived far away from the clinic belonged to a higher socioeconomic status and had ready access to private transportation, and, therefore, found it very easy to commute to the clinic. The women who belonged to a lower socioeconomic status, on the other hand, lived closer to the clinic, but could not afford such transportation and used the clinic only when they lived sufficiently close to walk the distance.

If, even in the best of conditions, travelling a distance of several kilometers over difficult terrain and with inappropriate or no transportation is a daunting task, the task of transporting a woman in labor or with complications of pregnancy over that distance is formidable. In Kenya, more than one half of the rural women who intended to deliver in the district

hospital eventually delivered at home because they could not get there once labor began (Voorhoeve, Kars, and van Ginneken 1984). Data from Thailand also suggests that this is the chief reason for the high percentage of home births in rural areas (Sujpluem, Kanchanasinith, and Narkavonekit 1981). Another particularly vivid description of this predicament comes from Pakistan:

> I used to get my check up every month from this LHV [local health visitor] and it would have been better to get my child delivered here. The pains started at night. My husband came here to call her. But this LHV refused to come and I had to have the baby delivered by the village dai. Because the case was serious the baby died....The dai belongs to the village. When a dai is needed we can call her easily. We don't have any transport for going to the hospital. If the labor pains start at night how can we go there without conveyance? (Schmidt 1983: 420).

Even when local transportation is available, it may be an inconvenient mode of travel to use when a woman is in labor or has obstetric complications. In Zaire, one study showed that, because of the absence of ambulances, women in labor were forced to walk to the referral center or to go on a motorcycle (Duale et al. 1988). One of the chief reasons for the low referral rates in a "risk approach" program in Mozambique (in which prenatal clinics directed mothers at risk to specialist care) was the lack of adequate transportation services. Only five of the existing 28 city ambulances were in service, leading to a long and often fatal delay for rural women in need of emergency care (Jelley and Madeley 1983). Attah (1986) vividly illustrates the tragic consequences of a lack of transportation in a rural community in Nigeria where a pregnant woman in need of emergency care died only because of the absence of any means to take her to the hospital. Improved transportation is essential for any referral system to work effectively. As Maine et al. (1986) so succinctly pointed out, a jeep is an important piece of obstetrical equipment. In fact, the availability of any motorized vehicle can often make the difference between life and death in the case of an obstetrical emergency.

In this context, a study that revealed sex differences in the effect of distance on utilization is particularly interesting. In the Kano State of Nigeria, men were found to travel longer distances than women because the spatial mobility of women was restricted by the religious custom of purdah. Married women had to obtain the permission of their husbands before leaving the home. It was reported that many women were not permitted to make long journeys for treatment of illnesses without escorts, particularly if the illness was not thought to be serious and was perceived to be amenable to traditional treatment (Stock 1983). In addition, the study revealed cultural restrictions on the mode of transportation that women could use. Travel on a bicycle, motorcycle, donkey, or horse was not permissible for women. The only other alternative, motorized transportation, was extremely expensive, making the cost of a given distance much higher for women than for men. Thus, even when some form of transportation was available to the community, women did not have access to it. Therefore, for intermediate distances of five to twenty kilometers, the greater accessibility of health services to men was particularly pronounced.

Another variable that has been reported to play an important mediating role in the subjective estimation of distance is the perceived quality of services. While this variable will be discussed in greater detail later, it must be mentioned here that people have been found to be willing to travel farther for more specialized services, for better quality services, and as mentioned before, for curative rather than preventive care (Favin, Bradford, and Cebula 1984; Stock 1983). Data from rural Nigeria showed that people readily travel longer distances to reach a hospital or rural health clinic rather than a local government dispensary, because the latter is perceived as being lower quality and more likely to be short of supplies and equipment (Stock 1983). Peripheral facilities frequently lack the basic essentials of service. A shortage of drugs and other supplies, the limited availability of health personnel, and long waiting times, are all experiences that patients expect from a visit to such a facility. These expectations increase their subjective judgment that it is "too far to go" to use primary level services, and create the paradox that they will sometimes make the effort to use services that are actually further away.

Community Based Care and Traditional Birth Attendants

One way to increase the accessibility of health services for women is to bring the services to women rather than waiting for them to seek health care. Recognizing the advantages of a more client-centered system, community based health programs have now become a popular addition to formal, facility-based health care systems in developing countries. Such programs usually include medical personnel (such as doctors and nurses) who visit communities in mobile health teams; and/or indigenous community health workers who are locally based volunteers who have been trained; and/or traditional birth attendants who have undergone formal training.

Of these alternatives, the training of traditional birth attendants (TBAs) has been the most popular method adopted for increasing the coverage of maternal care. The label "traditional birth attendant" is used to refer to those persons within a community (usually women) who have not undergone formal Western, medical training, but who nevertheless possess specialized knowledge and assist in childbirth, and immediate post-delivery care and sometimes even prenatal care (Favin, Bradford, and Cebula 1984). It is commonly estimated that TBAs assist at least 60-80 percent of births in the Third World, and in many communities they are often the only providers of maternal care available (Mangay-Maglacas and Pizurki 1981). Because they are culturally acceptable and widely available it has seemed logical to attempt to improve the coverage of maternal care by integrating TBAs into the formal health system.[6]

At the same time, while traditional midwives are recognized as an important source of maternal care, it is also recognized that some of their practices are harmful. For example, the use of nonsterile equipment during delivery, the use of excessively vigorous abdominal massage, encouraging pushing during the early stages of delivery, and the use of harmful drugs such as oxytoxin derived from herbal sources, to increase the speed of labor are all reported to be common practices among TBAs (Favin, Bradford, and Cebula 1984; Mangay-Angara 1981). Moreover, TBAs are unable to handle most obstetric complications, though many of them are able to recognize the danger signals. Thus, it is widely accepted that if TBAs are to be utilized as a part of the

[6]As mentioned earlier in many communities births are attended by female family members or experienced women in the community rather than TBAs.

formal medical system, their skills to handle uncomplicated deliveries must be upgraded and adequate referral for complicated deliveries must be available (Mangay-Maglacas and Pizurki 1981).

In the last twenty years, training of TBAs has been a central focus of maternal care programs in a very large number of developing countries. Between 1972 to 1984 the number of countries with TBA training programs rose from 24 to 52 (Leedam 1985). In general, trained TBAs are expected to serve the following functions: to encourage women to seek prenatal care; to identify women at high risk and to refer them to specialists for medical attention; to avoid inducing infection or trauma at delivery; and to encourage women to use family planning after delivery (Maine et al. 1986).

There are two key advantages that are usually cited for training and integrating TBAs into the formal medical system: first, they are often the only health workers in rural areas; and second, the cost of integrating them is relatively low because, in large part, they continue to be reimbursed by the community that they serve by the means deemed appropriate by local custom. In addition, TBAs can fill a gap in the existing formal health system for maternal care; for the vast majority of uncomplicated, normal pregnancies, they appear to serve women's needs better than most trained doctors and nurses because of the emotional support they provide and because of their attention to and acceptance of local traditional beliefs and practices. A study in Zimbabwe showed that women perceived the formal health care system as caring for their physical health and hygiene whereas the informal system was perceived as caring for their spiritual or moral health (Mutambirwa 1985). Since the need for moral and spiritual support was perceived to be greater at the time of delivery, mothers continued to depend on traditional care for childbirth although they were willing to accept prenatal care from formal health services.

A TBA program that is often cited as a prototype example of a successful program is the one in Fortaleza, Brazil (Maine et al. 1986; Araujo et al. 1983). This program was started in 1975 by the Maternidade Escola Assis Chateaubriand (MEAC) to improve the maternal care to women in the rural areas of the state of Ceara in Northeast Brazil. Local TBAs were recruited for this

program and were given a three-month course in basic obstetrics and in the identification of high risk cases for referral. As part of the program, community leaders were requested to provide vacant buildings to serve as small local obstetric units. Each unit consisted of an outpatient clinic, a delivery room, and a room with two to seven beds for postpartum recovery. Some of the trained TBAs staffed these units, while the others functioned from their homes within the community. The local obstetric units were open 24 hours a day, seven days a week, and were supported by an ambulance and a driver to transfer complicated deliveries to the hospital. A team, consisting of an obstetrician and a nurse, visited each unit once a week to provide prenatal care and immunization and also to supervise the work of the TBAs. The success of this program led to a second phase in which one-bed units were attached to TBAs' homes in more remote and sparsely populated areas.

Evaluations showed that the maternal and infant health services were significantly improved in a relatively short period of time, and at a reasonable cost, through the MEAC program. Several factors seem to have contributed to the success of this program. The first was the availability of personnel for regular and close supervision. Another was the availability of a reliable transportation service to support the referral service offered by the TBAs. Other key factors were the involvement of the TBAs in the design of the program, the active participation of the community in establishing local obstetric units and a real commitment by MEAC and the Federal University of Ceara to improving maternal health (Maine et al. 1986; Araujo et al. 1983).

However, adequate availability of personnel and transportation are not typical of most developing country situations where TBA training programs have been initiated. In fact, success stories such as the Ceara experience are more the exception than the rule. In another program in rural Northeast Brazil, the lack of transportation was cited as a cause for TBAs not referring all cases in need of medical care to the hospital (Janowitz et al. 1988). The journey to the nearest hospital was long and often the only means of getting to the hospital during labor was to walk, so the TBAs felt that referral to the hospital would be impossible or dangerous for the women. A similar result was reported by Duale and colleagues (1988) based on an analysis of a TBA program in Zaire. In Haiti, inadequate supervision and the absence of

periodic retraining were the causes of failure of the TBA program (Maine et al. 1986). Similarly, in Nicaragua the main difficulty encountered in implementing a *partera* (TBA) training program was in assuring adequate supervision. Other problems cited were the lack of standardized management information systems for providing information about the *parteras* to the central program staff and the lack of criteria for selecting suitable *parteras* for the training program (Heiby 1981).

Often, even the training offered to TBAs is inadequate and inappropriate so that from the very outset the program is destined to fail. In an excellent analysis of training programs for TBAs in Yucatan, Mexico, Jordan (forthcoming) highlights how the use of a didactic, lecture mode of teaching and the use of written, objective tests for evaluating the success of a training program are ineffective techniques that do not achieve their goals. Moreover, Jordan points out that such training programs often over-emphasize the necessity to use a given set of tools (as included in a standard "midwifery kit") to conduct a "safe" delivery. She observed that a considerable amount of time is spent in emphasizing how indispensable those particular artifacts were for competent performance. As a result, the TBAs are left with a view of their work that undermines their confidence in themselves because it implies that the use of any of their local tools is wrong. Ironically, after such an over-emphasis on the use of the midwifery kit, most training programs run out of supplies and often the trained TBA is left without the very artifacts which she now believes are essential for competent performance. In general, such training runs the risk of fostering dependency on Western methods and practices rather than integrating and encouraging safe indigenous methods of care. Instead of a process of "give and take" that encourages discussion and fosters a two-way learning process, such training programs often convey the impression that indigenous practices have no merit and that the Western bio-medical approach is always superior.

Thus, while the idea of training TBAs to extend coverage of maternal care and particularly to make care more easily accessible to women has much to recommend it, careful planning and adequate resources are necessary for such programs to achieve their goals. Appropriate training followed by periodic and reliable supervision and evaluation, and whenever necessary, retraining,

are essential ingredients of a successful TBA program. In addition adequate infrastructural support in terms of reliable transportation to permit successful referral and the availability and frequent replenishment of appropriate tools and equipment are necessary for the smooth functioning of such a program.

Affordability

Another important factor affecting utilization of maternal case services is cost. We consider the cost of using maternal care services to include the cost of getting to the medical installation, the cost to use the service, and the cost for any medicines or other complements required for treatment. Each of these costs, in turn, has two components: a direct monetary cost and an indirect time cost. Thus, the monetary variables discussed are: the money spent on transportation, money paid for the service, and the money spent on obtaining the necessary drugs or complementary services such as tests. The "time" variables are the transportation time, the time spent waiting to be seen and examined, and the time spent in obtaining the appropriate drugs or complementary services. Other "costs" (occasionally referred to in studies as cultural or ideational costs) caused by an incongruence between indigenous cultural beliefs and practices about pregnancy and childbirth, and those adopted by the Western bio-medical system are discussed under sociocultural factors in the next section.

Monetary Costs

The monetary expenditure on transportation, fees for medical services, and the cost of drugs and other complements have been found to have complex and sometimes unexpected effects on demand for services. In some developing countries, any money spent on travel to a medical facility is a small part of the total real cost (i.e. cash price plus time costs) of transportation because, in such countries, most transportation to health services is by foot or on bicycle. For example, in a survey of three provinces in a rural region of the Philippines, it was reported that 44 percent of the public clinics and 37 percent of the private clinics were reached by walking or by a combination of riding and walking (Akin et al. 1985). Data from Calabar, Nigeria, also indicated that over 60 percent of all patients walked to receive health care

(Gesler 1979). On the other hand, in reports from other countries, the high monetary cost of transportation is singled out as a major obstacle to the utilization of health services (Attah 1986; Bhende 1983; Lasker 1981). Although the bulk of travel in most developing countries may be undertaken by using low-cost means (i.e. on foot or by bicycle), these modes of transportation are only possible over relatively short distances. When the distance to a health facility increases, accessibility and utilization are drastically reduced because of the necessity of paying for transportation.

Because medical services at public health facilities and government clinics are usually free, the main monetary costs faced by the users of such services are the transportation expenditures and the cost of the complements. Thus, it would be expected that users of free government clinics would be particularly sensitive to transportation costs. However, even in studies of factors affecting the use of private clinics travel costs have been found to have a significant negative effect on utilization (Akin et al. 1985).

The effect of the monetary cost of the service itself on utilization is even more complex than the cost of transportation. Logically it would be expected that, other things being equal, the imposition of a fee for a medical service would reduce utilization of a health facility. Some studies have reported exactly such an effect. For example, data from Tanzania comparing the use of a free government hospital with that of a mission hospital that charged a fee for treatment, showed that the free government hospital treated approximately three times the number of patients treated by the mission hospital (van Etten 1972). Similarly, a study from Nigeria reported the devastating effects of fee increases on the utilization of a public sector health facility that had previously been free (Attah 1986). A report from the Philippines Ministry of Health states that the fear of monetary cost is a key deterrent to the utilization of health services by the poor in both rural and urban areas in the Philippines (Mangay-Angara 1981). Another study from the Cebu region in the Philippines found that an increase in the price of childbirth services by any of a number of different types of providers reduced the probability of that service being used (Schwartz, Akin, and Popkin 1986).

In sharp contrast, there have been studies that have implied either that the utilization of maternity and other primary health care facilities was not sensitive to cash price (Wong et al. 1987; Akin et al. 1985; Popkin, Akin, and Wong 1986; Heller 1982), or that, in fact, cash costs have positive effects on use (Claquin 1981; Evans, Hall, and Warford 1981). The latter result has been attributed to a perception that quality can be judged by price. As Akin and colleagues observe, "in some cultures health facilities are thought to betray their low quality if they are unwilling to charge a price for what they do" (Akin et al. 1985: 64). A survey in the Côte d'Ivoire, for example, found that 41 percent of the respondents preferred to pay for medical services and in another survey in the same country 80 percent of a sample of respondents from six major cities felt they were better cared for if they paid for their care (Lasker 1981). In a discussion of this issue, Evans, Hall, and Warford (1981) point out that though many governments avoid charging a user fee for fear of excluding the poor, the imposition of such fees could, in fact, have a positive impact on utilization by increasing the perceived value of services and therefore the demand for them over alternative 'free' care.

In many developing countries, households are known to spend as much as two to five percent of their annual income on health care. Rural households often spend much more in years of poor health. Data from rural Mali shows that drug purchases alone take up 5 percent of income, while in Indonesia and Malawi fees paid to traditional practitioners take up 10 percent of annual income (Akin, Birdsall, and deFerranti 1987). A survey conducted in rural Afghanistan revealed that 7.4 percent of the annual household income of the average family was spent on health care (O'Connor 1980). In fact, 87.5 percent of all money spent on health care in Afghanistan came from the incomes of poor villagers. Moreover, the study revealed that a major percentage of that expenditure was used to buy drugs. This seems to indicate an ability and willingness to pay for curative care. Akin, Birdsall, and deFerranti suggest that, therefore, the public sector "could tap this source to finance modern curative care and effective drugs and to free public funds for preventive programs" (Akin, Birdsall, and deFerranti 1987: 31). Akin and colleagues make the argument that charges to cover the cost of drugs in public facilities might, in fact, *reduce* overall household spending on drugs, because, if the money collected were spent to make the supply of drugs more available in

public facilities, clients would save the higher costs involved in repeated visits and the expenditure incurred at private pharmacies.

Overall, Akin, Birdsall, and deFerranti (1987) observe that proximity and quality of health care are far more important than fees in household decisions about whether to seek health care and what type to use. Even the demand for preventive care for mothers and infants was found to be not particularly sensitive to the amount of the fee. They emphasize that if public services are of poor quality or are too far away, even free services will not attract clients.

Before too hastily discounting the monetary cost of maternal care services as a barrier to utilization, however, it should be noted that there are differences between the poor and the ultra poor in their responses to prices. Data from Peru on demand for a range of different health services (Gertler, Locay, and Sanderson 1986 cited by Bitran 1988) showed that the lower the income of the individual the more likely it is that the price will deter demand. Thus, it is reasonable to assume that among the poorest women, even moderate price increases might result in a considerable reduction in utilization of maternal care services.

Reports from a wide range of developing countries also indicate that medical services in public primary health care facilities are only theoretically free. In practice, widespread corruption and bribery among the health service personnel makes the cost of such services much more expensive than they appear to be. Studies from Bangladesh (Rahman 1981), Côte d'Ivoire (Lasker 1981), Guatemala (Annis 1981), India (Khan, Prasad, and Quaiser 1983), Nigeria (Attah 1986), Pakistan (Schmidt 1983), and Thailand (Sujpluem, Kanchanasinith, and Narkavonakit 1981) all found that health personnel had demanded unofficial payment for "free" services. Using the focus group technique, one study of public sector health facilities in the Imo State of Nigeria revealed that such "surcharges" during pregnancy were perceived by the consumers as being insurance for adequate care during labor (Attah 1986). Incidents in which surgeons actually hold patients to ransom before operating have been reported from Nigeria as well as from Côte d'Ivoire (Attah 1986; Lasker 1981).

Such unofficial fees have been shown to deter utilization of modern maternal care services particularly when the amount of money spent far exceeds the fees legitimately charged by private practitioners or traditional midwives. As one woman from Pakistan explained: "A *dai* is happy to accept 10 - 15 rupees but in a hospital you have to give 15 rupees tip to each and every staff member and the doctor's fee on top of that" (Schmidt 1983: 419). Such discrepancies between theoretical and actual costs need to be documented more carefully from other Third World countries in order to determine the magnitude of the corruption, its impact on the utilization of public maternal care services, and what measures can be taken to reduce the extent of such costs.

The complements of modern care, including drugs, laboratory tests, and the requirement for return visits, frequently require additional monetary expenditures by the user. The supply of modern drugs is so grossly inadequate in most developing countries that public pharmacies, which are supposed to provide drugs free of cost, are often unable to meet the demand (Akin et al. 1985). As a result, patients are forced to make several additional trips until they are able to obtain the necessary drugs. Often to avoid the extra return trips and the transportation costs involved, patients instead purchase prescription drugs from private pharmacies. In addition, the shortages of laboratory equipment at public facilities result in patients being forced to pay for private laboratory testing. For example, in the Philippines more than 90 percent of the MCH clinics had inadequate clinical equipment (Mangay-Angara 1981); in Maputo, Mozambique rural medical centers are reported to lack the facilities for the immediate analysis of blood and urine (Jelley and Madeley 1983); and in Jamaica many maternal care centers lack the equipment necessary to conduct an ordinary hemoglobin count to check for anemia in pregnant women (William Simmons, personal communication). Typically, therefore, even in the best circumstances only the medical examination/consultation itself is free of charge.

Corruption associated with the management of drug supplies has also been reported in one study from Nigeria as being the cause for disillusionment among the patients. In a focus group discussion, the clients reported that

they had purchased drugs from the open market which had the government stamp on them (Attah 1986). Apparently then, drug supplies were being diverted and sold by health personnel. The clients also complained that they had been referred to private clinics for laboratory tests that could have been done at the public facility. Such corrupt practices were cited as reasons for the underutilization of the public health facility (Attah 1986).

The cost of complements is often sufficient to deter compliance with the medical regimen advocated by health personnel. For example, one study from Côte d'Ivoire reported that the non-availability of free medicines and public pharmacies resulted in a very high cost to merely fill a prescription. Moreover, because the health facilities lacked appropriate diagnostic equipment, the doctors were forced to try out several drugs before "hitting upon the right one" (Lasker 1981). This involved a high cost for the transportation for each visit and for the cost of the entire range of trial drugs.

Time Costs

The use of formal maternal care services by women in developing countries involves not only monetary but also time costs. The two major time costs incurred in using modern health care services are travel time and waiting time. Such time costs are a heavy price to pay because for most women this means a loss in the amount of time available for other more urgent and often economically productive activities.[7]

The discussion in an earlier subsection of the effect of distance on utilization of maternal services highlighted the long and often arduous journeys that are necessary before a woman can reach a health center particularly in rural areas. In a study from the Cebu region of the Philippines, Schwartz, Akin, and Popkin (1986) report that increased travel time significantly reduced utilization of child delivery services (public, private, or traditional) in rural areas. Data from the same study also showed that increased travel time reduced the number of visits to traditional practitioners for prenatal care (Popkin, Akin, and Wong 1986).

[7] See Leslie (forthcoming) for a more extensive discussion of the competition between the time demands of health care and productive work as it relates to use of child survival technologies.

Beyond the time spent on reaching the facility, the long time spent waiting at most health facilities is an added cost. Waiting time was found to be the chief barrier to the utilization of a maternal care clinic in Lagos, Nigeria (Bamisaiye, Ransome-Kuti, and Famurewa 1986). Data indicated that the mean waiting time at this clinic was over two hours while the actual service time was less than fifteen minutes. Despite the fact that this was lower than the waiting time at other clinics, it was found to be a definite deterrent for women using the service for routine check-ups. The analysis of data revealed that women were found to be more willing to wait for curative care than for preventive or promotive care, because mothers tended to give higher priority to the former.[8] Studies from Bangladesh (Rahman 1981), Côte d'Ivoire (Lasker 1981), Ecuador (Ruffing and Smith 1984), India (Misra 1983; Khan, Prasad, and Quaiser 1983), and Nigeria (Attah 1986; Gesler 1979) also report a negative impact of waiting time on utilization. In the study from Côte d'Ivoire it was observed that patients had to wait several hours for a few minutes of attention. Moreover, because of a shortage of supplies or personnel, patients were often forced to travel to other clinics. This was followed by waiting for laboratory tests and their results, for medical prescriptions, and even for obtaining the drugs (Lasker 1981). As emphasized earlier, time losses of this magnitude represent a significant cost for Third World women because of the problems of juggling child care arrangements and sacrificing time that could be used for economic or household production activities.

Often the way in which MCH services are organized unnecessarily increases the amount of time spent in obtaining medical attention. An excellent example is a maternal nutrition and health care program in Ecuador which was made up of fragmented components, such that the distribution of the nutritional supplement was not done on the same day as the prenatal examinations or the well-baby clinic (Ruffing and Smith 1984). Thus, mothers using this clinic were forced to return several times in order to use all the services. The waiting time and travel time associated with each visit made it unrealistic to expect high compliance with all the components of the program.

[8]This is similar to evidence cited earlier that people are more willing to travel a given distance for curative care rather than for preventive care.

Another example of poor organization comes from the study of a the maternal health clinic in Lagos, Nigeria, referred to above (Bamisaiye, Ransome-Kuti, and Famurewa 1986). The study found that since service was supposed to begin at 8 a.m. on a "first come first served" basis, many mothers arrived well before 8 a.m. to secure a place in line and wait for the clinic to open for the day. Often, however, the clinic did not start promptly because of the late arrival of the staff, which increased the already substantial time women had put in waiting. Moreover, since all the women were expected to be there at the start of the clinic, the waiting time for those further down the line was greater. Two simple strategies were recommended by the researchers to reduce waiting time. Their first recommendation was to ensure the prompt start of service at 8 a.m., and their second, was to introduce a two-shift clinic as a step towards permitting a more variable arrival time for patients. The flexibility of a two-shift clinic would also give women an option to choose a time convenient to them rather than be forced to give up prime production time to attend the clinic.

In general, an increase in the hours of availability of a service increases the probability of its use. Schwartz, Akin, and Popkin (1986) found this to be true for child delivery services in both rural and urban areas of the Cebu region in the Philippines. A study in Kenya showed that when maternal and child health services were integrated with other clinic services and provided daily, utilization increased by 50 percent (Favin, Bradford, and Cebula 1984). Fixed days and times for the provision of different MCH services may not be understood by many Third World women who often do not share the health staff's assumptions about the importance of schedules. Often, women who arrive at a facility at the "wrong" time or day do not benefit from the services merely because of unnecessarily rigid rules (Favin, Bradford, and Cebula 1984). An example of this comes from a study of utilization of child immunization, services in Haiti where it was found that poorly timed services substantially increased their opportunity cost to the users. Health posts in Haiti were invariably scheduled to coincide with peak market hours making it difficult for women to take time off to attend the health post (Coreil 1987a).

Ayalew (1985) cites several examples in a paper calling for time analysis as a part of primary health care planning in Ethiopia. He states that the poor accessibility of health care services coupled with the fact that there is work, of one sort or the other that is of high priority to the users, explains the low utilization rates of health services. Ayalew suggests an increase in referral centers and cheaper health units as the only way to increase accessibility, reduce the time costs to users, and thus, increase utilization of health services in Ethiopia.

However, in contrast to the studies reviewed above, there are some studies indicating that waiting time and travel time are *not* necessarily significant barriers to the utilization of health services. A study from the Bicol region of the Philippines reported that waiting time did not seem to deter utilization of a primary health facility (Akin, et al. 1986). The researchers hypothesized that quality considerations could have accounted for this somewhat unexpected finding. In their view, a long waiting time was perceived by users as an indication of the higher quality of the service. However, the validity of this hypothesis was not investigated. In West Malaysia, too, waiting times in the range of 30 to 40 minutes were not found to be a deterrent to utilization of either private or government clinics (Heller 1982). The explanation offered was that patients found the waiting time gave them a chance to socialize. Akin et al. (1985) cite a 1982 study by Cosminsky that provides further indication that an opportunity to socialize may have a significant effect on the attitude of users concerning waiting time. In the Guatemala study, patients complained abut the time spent waiting in the government clinic, and cited long waiting times specifically as a reason for not returning to the clinic. However, there was no complaint about the time spent waiting for a traditional herbalist, even though the waiting time was about the same. Akin et al. suggest that "one factor causing this behavior may have been the very formal atmosphere of the clinic ... chairs were lined up in rows with people sitting separately and silently" while at the traditional practitioner "people moved around, benches and chairs were arranges so people could talk to each other; and more interaction and socializing occurred" (Akin et al. 1985: 61).

The studies cited above suggest that there may, under some circumstances, be some compensatory benefits associated with the time spent waiting for health or nutrition services. Education sessions at health clinics and food distribution centers are frequently organized at least in part to productively use women's waiting time. Supplementary feeding programs (generally targeted at preschool age children and pregnant and lactating women) usually offer some nutrition education while women are waiting to receive their food or to have their children weighed. While the effect of these sessions on nutrition knowledge and practices has been somewhat disappointing, a few programs have demonstrated a positive effect directly attributable to the nutrition education, and they represent at least an attempt to put the women's waiting time to good use (AID/FVA/PPE 1985; Hornik 1985). Another example of such a use of waiting time is in the report on a health clinic for mothers and children in Lagos, Nigeria (Bamisaiye, Ransome-Kuti, and Famurewa 1986). In that clinic a small portion of the waiting time is utilized for a "health talk" in which a member of the staff addresses all the women present on preventive and promotive aspects of maternity care. However, instead of reducing the burden of waiting time, this talk necessitates that all the women attending the clinic that day be present when the clinic opens, thereby increasing the waiting time by preventing the possibility of a staggered arrival time. Research is specifically needed to determine whether the use of waiting time for educational purposes can, under optimal circumstances, decrease a negative effect of waiting on utilization.

Quality of Care

The decision to choose a health or nutrition service is determined not only by its availability, accessibility, and affordability but also by the quality of the service offered. The key components of the quality of a health service are the efficacy of the treatment it offers, the availability of supplies and equipment, the characteristics of its personnel, and the nature of its management and organizational structure. The impact of each of these on utilization is discussed below.

There are two approaches to assessing the quality of services: the first is by the user's perception of it and the second is based on an objective

evaluation of the quality of care the service offers (the extent to which morbidity or mortality is reduced, for example). The former will be discussed in greater detail in the section on user factors. The discussion in this section, of the effect of quality of care on utilization, is more from the perspective of the service providers.

Efficacy of Treatment

The efficacy of the treatment and care offered by a facility is probably a fundamental determinant of utilization although it seems to have received less attention than other aspects of quality of care. Within the context of formal services for maternal care, one key question that needs to be addressed is whether the different components of care offered during pregnancy, delivery and the post-natal period are as or more effective than maternal care offered by other kinds of services.

There seems to be no doubt that modern, Western medicine through immunizations, nutritional monitoring and supplementation as needed, risk screening and the availability of reliable and sophisticated technology to handle obstetrical crises, has contributed in a major way to reducing maternal morbidity and mortality. In comparison to a complete reliance on purely traditional forms of maternal care, formal medical maternal health care clearly has much to offer, particularly to high risk women. However, a question that remains open, and one that generates heated debate, is the extent to which this justifies or requires the substitution of all traditional practices by a modern, bio-medical approach to maternal care. The controversy regarding the over-mechanization of birth and the medicalization of an event that is essentially a normal biological process, and the debate concerning the appropriateness of home births versus institutionalized births represent critical unresolved issues related to the efficacy of formal maternal care.

One frequently voiced concern is that overcrowded and unhygienic conditions, combined with inadequate training of medical personnel, may put some women at higher risk in a hospital or maternity clinic than they would have been had they not chosen to utilize formal maternal services. Pelvic examinations during prenatal visits are one example of a component of formal maternal care that probably carries more risks than benefits for most women in

developing countries. The high rate of maternal mortality in many hospitals in the Third World is also a source of continuing concern. However, these high rates do not *necessarily* indicate ineffective treatment since so many hospital admissions in developing countries are emergency admissions and, for many obstetrical complications, the line between the onset of a complication and death is very short (Maine et al. 1986).

An important measure of efficacy of maternal care at the peripheral level is the extent to which referrals by trained TBAs or other primary health care workers are honored at the hospital or other referral level facility. A study of factors affecting utilization of health services in Honduras found that a major weak point in the system was the disdainful attitude by physicians towards referrals from auxiliary nurses and community health workers (Martin 1981 cited in Favin, Bradford, and Cebula 1984).

Availability of Supplies and Equipment

The inadequate supply of drugs at health facilities is a widespread problem that is known to negatively affect the quality of care provided and the utilization of health centers and hospitals in most developing countries. Where modern maternal care services are perceived by clients to be low quality services it is frequently because of such shortages.

Maine et al. (1986) describe conditions in a university teaching hospital in a "fairly prosperous African country" where, because of a severe shortage of supplies, the family members of the woman undergoing a Cesarean-section had to be sent out to buy gloves for the physician, sutures, and drugs. There is evidence from many countries to indicate that such shortages are very common, often hinder the everyday functioning of the health center or facility and have negative implications for utilization [Ecuador (Ruffing and Smith 1984); Guatemala (Annis 1981); India (Misra 1983); Nigeria (Attah 1986; Bamisaiye 1984); Philippines (Schwartz, Akin, and Popkin 1986); Yemen Arab Republic (Haggar et al. 1986); Zambia (Freund 1986)]. In Tanzania, shortages of blood, drugs, and equipment were responsible for more than half the maternal deaths studied (Mtimavalye et al. 1985 cited by Maine et al. 1986); while in Papua New Guinea, nearly one fifth of the maternal deaths from hemorrhage at a

health center occurred because of inadequate supplies and staff (Mola and Aitken 1984).

Statistics such as these underline the urgency for critically evaluating and assessing the supply and inventory control systems that operate within modern health facilities. Having to continuously function with shortages of supplies and inadequate equipment also affects the morale and motivation of the staff (Bamisaiye 1984; Misra 1983). In a primary health center in Bihar, India, for example, interviews with the staff revealed that penicillin had been out of stock for the last two years and tetanus toxoid was out of stock in six out of the eight sub-centers monitored by that primary health clinic (Khan, Prasad, and Quaiser 1983).[9] Similarly, in Jamaica, primary health centers offering maternal health services were reported to be functioning without any supply of iron supplementation for over a year (William Simmons, personal communication).

A similar situation was reported from the Imo State of Nigeria: "Here chronic shortages of drugs at government health institutions are so notorious that the expression O/S (out of stock) has become standard in everyday speech" (Attah 1986: 6). Such shortages forced patients to buy prescribed drugs from private pharmacists. Shortages of chemical reagents were also reported, making laboratory tests impossible to carry out. Each of these conditions were cited by community members in a focus group discussion as significant cause for the underutilization of government facilities.

The lack of availability of drugs was found to be a factor that discouraged the use of formal child delivery services in the Cebu region of the Philippines, particularly among the urban population sampled (Schwartz, Akin, and Popkin 1986). Similarly, data from Guatemala showed that despite the fact that the health centers were reasonably well located and had convenient hours of functioning, the lack of adequate staff and equipment was sufficient to deter utilization (Annis 1981). Not only were drugs and medical equipment in short supply, the centers even lacked adequate furniture. More than half the health posts lacked shelving, cabinets, waiting-room benches,

[9] Instead, the center routinely received ayurvedic drugs which were never used because the doctors were not trained to use them and because patients preferred allopathic drugs.

and workable refrigerators. Reviewing the lack of medical equipment, drugs, and furniture, Annis observed that these shortages accounted for much of the perception that health posts do not have "good medicines," i.e. medicines that can cure. He concluded that the low utilization of facilities reflected poor quality of services and not problems of physical access or "mysterious 'cultural barriers'."

The analysis of the obstacles to the proper functioning of the nutritional supplement component of a maternal care program in Ecuador provides insights into the way in which poor planning and a lack of organization create similar shortages to those discussed above in terms of medical supplies:

> .the actual implementation of the program is hindered by the sporadic arrival of the [food] supplement to the service units. This is a result of insufficient production by the packaging plant, unreliable transportation, or failure on the part of local staff to accurately estimate quantities needed for distribution each month. (Ruffing and Smith 1984: 205).

Moreover, because of the inefficiency of this system, the other components of the Ecuador program also suffer. When the nutritional supplement finally arrives, the staff attempt to distribute it all in one day. As a result, the prenatal and child care components, as well as health education, are neglected for that period of time. Thus the crucial link that needs to be established between nutrition and the other preventive components of the program is lost (Ruffing and Smith 1984).

Before concluding the discussion on the impact of inadequate supplies on utilization, certain rural-urban differences in the availability of drugs and supplies need to be highlighted. As in the case of the availability and distribution of health personnel and facilities, problems of drug shortages and inadequate equipment are more common in rural facilities than in the urban ones. Data from Maputo, Mozambique, show that rural referral centers had no facilities for the immediate analysis of blood and urine samples, while the

urban centers were equipped with such conveniences. Moreover, the rural zone, as compared to the urban one, had many more districts with poor transportation services (i.e. a shortage of fully functioning ambulances) (Jelley and Madeley 1983). An analysis of the distribution of available drugs in Zambia reveals that the three central hospitals consumed more than 50 percent of the total amount of drugs, leaving the vast majority of provincial/district health centers with chronic shortages (Freund 1986).

A pattern of overprescription, improper storage, poor management and inventory control, distribution and transportation problems, and a preference for buying expensive rather than generic drugs are all cited as reasons for the shortages of drugs in health centers in the developing world (Freund 1986; Akin et al. 1985). There is an urgent need to recognize and rectify these problems because a supply of essential drugs is of vital importance to the success of primary health care. Drug and food supplement shortages lead to low utilization rates, health staff become disillusioned, and clients lose faith and confidence in the efficacy of the formal health system.

Characteristics of Personnel

In most developing countries there are two categories of health personnel: those who work at a fixed facility, and those who work at the community level. The former include those employed by the government, by non-government organizations, or those in private practice, who work at health posts, clinics, and hospitals. The latter (that is, those who work at the community level) play an especially important role in the area of maternal health. They are expected to play an active part in outreach campaigns, to bring health services closer to women rather than waiting for women to seek services. Most of these personnel are not as highly trained as the facility based personnel. They include community health workers, community nutrition workers, community health volunteers, auxiliary nurse midwives, and trained traditional birth attendants. Community level personnel may be either salaried, community-financed, or may work as volunteers. They are often expected to provide curative, preventive, and promotive health care services. Most of these workers are selected from within the community and therefore start out with at least one advantage over more specialized facility-based

personnel in that they can usually more easily establish rapport and identify with community members.

The effectiveness of health personnel in terms of providing appropriate maternal health care is determined by their skills, both technical and interpersonal, and by the organizational structure of the service within which they work. Technical skills are reflected in efficacy of treatment and organizational variables are discussed in the next sub-section, so the discussion below will focus on the effect of attitude of personnel on utilization of maternal nutrition and health care.

The attitude of health care personnel towards their clients is a key component of the quality of care provided by a maternal care services. The popularity of the traditional birth attendant as compared to formal providers of childbirth services has been attributed in part to the emotional support, warmth, and security provided by the midwife (Pillsbury and Brownlee 1989; Finerman 1984; Onuoha 1981). In sharp contrast, personnel at modern facilities, especially at government public clinics, are commonly described as rude, indifferent, and inattentive.

A large number of studies have found that the nature of the interaction between the health care provider and the client is an important determinant of the utilization of formal maternal care services. A study from Imo State in Nigeria, for example, reports that when asked for reasons to explain the underutilization of public health services, community members repeatedly talked about the negative attitude and demeanor of the medical personnel. They described the personnel, particularly the nurses, as harsh, rude, and uncaring (Attah 1986). There is similar data from Lagos, Nigeria (Bamisaiye 1984), and from Côte d'Ivoire (Lasker 1981). A study from India describes the behavior of medical staff in a primary health clinic as "indifferent... bordering on rudeness" and emphasizes that this caused the people to avoid use of the center (Misra 1983). The importance of the attitude of health care personnel may be particularly critical in the childbirth services component of maternal care because traditionally, in most developing countries, the person attending the birth plays a significant role in providing the mother with

emotional and even spiritual support and guidance (Finerman 1984; Onuoha 1981).

The negative attitude that health personnel display has, in turn, frequently been attributed to their poor work conditions and to ineffective organization and management of the formal system within which they are obliged to function. These are discussed in greater detail in the next sub-section. In maternal health clinics specifically, the constant pressure of having to handle life-threatening crises without adequate supplies or equipment has been frequently observed to create severe mental stress among personnel (Kwast, personal communication). Preliminary results from a study of factors influencing prenatal care among low-income Jamaican women indicate that nurses in Victoria Jubilee Hospital, the main maternity hospital in Kingston, are considerably frustrated by a lack of gloves, bleach, sheets, dishes, and even pens to write their reports. The researchers report that they have observed an attitude of alienation among the staff which is then communicated to the patients.. They also noted a corresponding dissatisfaction among the patients, who then tended to blame the nurses for what were broader structural problems (Rawlins, personal communication).

Another possible cause for the disinterest manifested by medical personnel, especially in rural clinics, is highlighted by Finerman (1983) in her study of health care choices available to Saraguro families in Ecuador. She observed that most of the physicians in the rural hospital were first year residents from medical school who were completing compulsory rural internships stipulated by the government. These doctors were often dissatisfied with their assignments mainly because, being of urban, upper class origin, they were unacquainted with the living conditions and customs of small rural communities. Poor living conditions in rural posts have frequently been reported to be the cause of disinterest and disillusionment among health care personnel (Khan, Prasad, and Quaiser 1983; Misra 1983; Mburu 1979). Such studies observe that civic and social amenities in rural areas are often of low quality making day-to-day living difficult. Health personnel who have lived most of their lives in relatively well-equipped urban areas find it particularly difficult to manage under such circumstances.

A large part of the failure of the Assistant Nurse Midwife (ANM) program of Nepal has been attributed to problems of adjustment to rural living (Justice 1984). The majority of ANMs are from urban areas but are expected to work at health posts in rural areas where basic amenities of water and electricity are often lacking. The ANMs interviewed reported difficulty in adjusting to such living conditions. They also spoke of the social isolation they experienced because of being perceived as outsiders by the local population. This made adjustment even more difficult. In addition, the ANMs were fearful of sexual advances and for their physical security. At least one other study, from India, reports similar fears for personal security among medical personnel who work in remote rural areas (Misra 1983). Another Indian experience, however, is more encouraging. The SEWA-Rural project which provides health care to women in a remote tribal area of the state of Gujarat, has found that much of its success is due to the efforts put into keeping motivation high among the staff. The high level of motivation is apparently due to a combination of factors including an attitude of respect towards workers at all levels, a shared spiritual outlook, and the provision of opportunities for entertainment and relaxation such as volleyball and music classes (Sohoni 1988; Desai 1988).

One of the outcomes of low staff morale is widespread efforts to supplement incomes or take advantage of their positions for personal gain. Clients of a public sector health facility in Nigeria reported that it was easier to get medical attention at the facility by "knowing someone." It was reported that relatives and friends of personnel were allowed to skip registration lines, and even previously out-of-stock drugs suddenly became available as a result of such personal connections (Attah 1986). Moreover, there are reports from Côte d'Ivoire (Lasker 1981), India (Khan, Prasad, and Quaiser 1983), and Nigeria (Attah 1986), that reveal that many government-employed physicians also have private clinics. In Nigeria it is reported that doctors "frequently referred patients to their private clinics where they would give them the solicitous care that they did not give at the public facility" (Attah 1986: 6).

In addition, because of these private clinics, physicians were frequently not available during duty hours at the public facility. For example, at a

primary health center in Bihar, India, it was observed that of the four doctors allocated to the center, only one attended regularly (Khan, Prasad and Quaiser 1983). Of the three who were absent, one was on study leave and the remaining two were running private practices 150 kilometers away from the primary health center to which they were assigned. Even the one doctor who did attend the primary health center was observed to begin his work at 11 a.m. because he used the morning hours to attend to his private practice at home. Many patients who wanted quality service, therefore, preferred to consult the doctor at his residence rather than at the center.

The widespread prevalence of bribery in the form of "unofficial surcharges" or "insurance" against complications during labor have already been discussed in the previous discussion on affordability of services. There is at least one study that has reported such corruption and cheating among community based personnel too. Annis (1981) reports claims made by community members in rural Guatemala that the auxiliary nurse (AN) routinely falsified her monthly reports, sold medicines for profit, gave medicines preferentially to friends or in exchange for small presents, and encouraged the over-use of expensive and very often useless injectables. Explaining the possible underlying causes for such behavior, Annis points out that the AN's work is unsupervised, that she is not well paid, and thus has no incentive or opportunity for professional advancement. Unlike most facility based personnel, the AN has no feedback from within the health infrastructure to improve performance nor support to provide caring and honest health care. Thus, even while highlighting the negative aspects of the attitudes of health personnel and their interactions with their clients, it is essential to recognize the role of poor personnel management and inefficient organizational systems in creating such attitudes.

Personnel Management and Organizational Structure

The short supply of trained medical and paramedical personnel is the most basic organizational problem in most health systems. Not only are physicians, nurses, and midwives generally in short supply, they are also unevenly distributed, with a heavier concentration in urban areas than in rural

areas.[10] Such shortages limit the amount of success a maternal care program can achieve and devalue the credibility of the program. One of the main reasons for which a maternal "risk referral" program in Maputo, Mozambique was not successful, for example, was because of a short supply of obstetricians. Thus, only one third of the women at risk who should have received obstetric consultations could actually do so (Jelley and Madeley 1983).

Even when health care centers have sufficient personnel, mismanagement of those personnel, ambiguous lines of command, ill-defined job descriptions, unrealistic expectations of performance, and poor work conditions can lead to low productivity and reduce the quality of health care provided. As discussed earlier, shortages of drugs and other essential supplies coupled with low salaries and no recognition of good performance have been found to lead to low morale amongst personnel (Abu-Zied and Dann 1985; Misra 1983; Golladay 1980). In at least one study from Ecuador, unrealistic health targets by the government were identified as the cause of the "apathy and burn-out" among health staff (Ruffing and Smith 1984). In the Yemen Arab Republic, community health workers felt that they were responsible for attending to an unrealistically high number of people. In addition, about a fifth of these workers lacked a precise idea of what their duties were supposed to be (Haggar et al. 1986).

In the study from Ecuador an evaluation of maternal care services revealed that the main reasons for the staff's failure to meet established criteria of efficiency and productivity were a lack of organization at the service unit level, and lack of support from the central level in terms of program supervision and supplies (Ruffing and Smith 1984). Similarly, the evaluation of a health center in urban Venezuela cited lack of training for staff, lack of supplies, and poor organization as the reasons for the ineffectiveness of the health center. In addition, there was confusion regarding the lines of authority and responsibility which further hindered performance (Rakowski and Kastner 1985).

[10]See the section on provision of maternal care for a discussion of this point.

Inappropriate and inadequate training of personnel has also been cited as a factor in lowering the quality of services offered by maternal care programs (Haggar et al. 1986; Abu-Zeid and Dann 1985; Khan, Prasad, and Quaiser 1983; Annis 1981). The training for physicians and nurses in many developing countries, for example, follows international curricula with an emphasis on sophisticated facilities and equipment. As a result, medical personnel are inadequately prepared for work in rural areas where such equipment is rarely available (Golladay 1980).

In addition, the training of community health workers as well as medical personnel has often been criticized for not taking into consideration local perceptions and beliefs about pregnancy and birth (Jordon, forthcoming; Finerman 1984). In fact, most medical schools implicitly convey the message that traditional medicine has nothing to offer. Such a dogmatic attitude decreases the potential for dialogue between modern and traditional practitioners and also helps to create barriers to the use of modern services in traditional societies. On the other hand, there are examples of training programs that include information about how traditional beliefs and practices can be integrated into modern medical systems. For example, Bastien (1987) has described how Bolivian doctors can be educated about Andean myths and beliefs that can be beneficial to their practice.

The lack of supervision of personnel at both the facility and community level is another fairly commonly cited cause for the inefficiency of a health program (Haggar et al. 1986; Khan, Prasad, and Quaiser 1983; Annis 1981). Setting up a health care program without provision for close supervision of personnel and a provision for periodic evaluation of performance results in wasted resources and lowered morale and work commitment (Favin, Bradford, and Cebula 1984; Heiby 1981). Annis (1981) attributes the corrupt practices adopted by the auxiliary nurse in the rural Guatemalan health program described earlier to the lack of supervision and training. Khan, Prasad, and Quaiser (1983) noted that in Bihar, India, community health workers and auxiliary nurse-midwives were very rarely supervised on the job, which led to lowered work commitment and diminished motivation. Nowhere is this more clearly demonstrated than in the case studies of trained TBAs. As mentioned earlier, inadequate supervision of trained TBAs in the field was the cause of

the failure of TBA programs in Haiti (Maine et al. 1986) and in Nicaragua (Heiby 1981) while the success of the Fortaleza program in Brazil was largely attributed to close and regular supervision of the trained TBAs.

Poor organization in the form of a lack of coordination between separate components of the service has been cited as one of the reasons for low rates of utilization of maternal care programs in Guatemala and Panama (Monteith et al. 1987). In both countries, postpartum care and well-baby care were offered as separate components of service on different days of the week. Analysis revealed that women were not willing to make two separate trips to the facility and so chose to attend only the well-baby clinic which they perceived as a higher priority need. Similarly, in the Ecuador maternal care program, the nutritional supplement component was run separately from the prenatal and well-baby services, requiring mothers to make several trips to the clinic if they wanted to utilize all the components (Ruffing and Smith 1984). In an analysis of programs seeking to improve the nutritional status of pregnant and lactating women in Latin America, Daza and Lechtig (1980) emphasize that, in order to be effective, nutrition services must be integrated with other services provided at a primary health center and should not be structured as a separate "vertical activity". A study in Kenya showed that when MCH services were integrated with other services and offered on a daily basis, utilization of the MCH services increased by 50 percent (Favin, Bradford, and Cebula 1984).

In Bangladesh, the separate components of the national maternal care program are distinct not only at the project level but also at the policy level. Each component is handled by a separate administration (Marjorie Koblinsky, personal communication). Prenatal and postnatal care are provided by family planning staff, delivery services fall under the jurisdiction of the health division of the government, and nutrition services (in the form of food supplements) are handled by another ministry entirely. Thus, while an individual woman may need prenatal, delivery, postnatal, and nutrition services, the system is designed so that she must interact with several different agencies in order to obtain the services she needs for herself, to say nothing of additional services that she may need for her children.

UTILIZATION OF MATERNAL CARE: USER FACTORS

As explained earlier, we have divided our analysis of the determinants of demand for maternal care into two broad categories. In the preceding section, we reviewed the quite extensive body of research concerning the effect of service factors on utilization of maternal nutrition and health care services. In this section, we focus on the somewhat fewer studies that have looked at the effect of user related factors on utilization of maternal care.

The factors discussed in this section are variables describing the characteristics or circumstances of women who are potential users of maternal nutrition and health care services. These user related determinants of utilization have been grouped as follows: age and parity, education, and information (including the effect of prior experience), income, competing time demands, and sociocultural and attitudinal factors.

Age and Parity

Age and parity, though distinct, are almost impossible to discuss separately because, for an individual woman higher parity is inevitably associated with increasing age. The usual conclusion from studies with data on age as related to utilization of formal maternal health services is that older women use such services less frequently than younger women (Monteith et al. 1987; Wong et al. 1987; Kwast et al. 1984). Data from Addis Ababa showed that a significantly higher proportion of older women than young women received no prenatal care and that older women showed a greater tendency to deliver at home (Kwast et al. 1984). Similarly, among Yoruba women of the Ogun state of Nigeria, proportionately fewer older than younger women delivered their children in a hospital (Taylor 1984). Not surprisingly then, studies have shown that high parity women use maternal care services less frequently than low parity women (Monteith et al. 1987; Akin et al. 1985; Potter 1985; Kwast et al. 1984; Taylor 1984; Bhende 1983). Data from a large scale survey in the state of Maharashtra, India, revealed that among high parity women (3 and above) only 17 percent visited a prenatal clinic whereas

33 percent of low parity women (1-2 children) did so (Bhende, 1983). A study from Zaire reports similar differences in the use of childbirth services; among women who delivered at the hospital 30 percent were primiparas, while only 15 percent of women who delivered at home were primiparas (Duale et al. 1988).

Attitudinal differences have sometimes been cited to explain the higher utilization of health services by young, primiparae women as compared to older, multiparae women. It has been suggested that older women tend to feel a sense of confidence because of their past experience with pregnancy and childbirth (Kwast et al. 1984).

Greater responsibilities, particularly the responsibility of caring for other young children has also been offered as a situational explanation for the differences in utilization of health services between primipara and multiparae mothers. There is evidence from the Philippines that an increase in the number of preschool aged children reduces the likelihood that women will use any type of prenatal care, because of the mother's time constraints and because frequently there are no other caretakers for the children (Wong et al. 1987).

It is difficult to generalize about the relative importance of attitudinal versus situational factors in explaining the differences in utilization patterns by age and parity. However, Akin et al. (1985) present data from the Philippines which clearly indicate that in this setting it was the presence of pre-school aged children, more than attitudinal factors, which significantly reduced the woman's use of formal prenatal services. In fact, their results suggested that the inverse correlation between age and prenatal visits may actually have been measuring the connection between more children and age rather than a direct age effect. They found that for a given age women with fewer children (and therefore fewer time constraints) were more likely to use modern prenatal care, but that for a given number of children, older women were actually more likely not less likely to use modern prenatal services.

One other study reported results that did not substantiate the inverse relationships between utilization and age and parity, respectively. In fact this study reported a significant positive relationship between these variables (Abbas and Walker 1986). Based on data from Jordan this study reports that maternal age was positively associated with the use of prenatal services and that women of low parity (1 to 3) were significantly less likely to use prenatal services than women of parity 4 to 6. The researchers offer no hypothesis for the reasons for such a relationship but they do assert that service related variables such as accessibility were found to be far more significant determinants of utilization than age or parity.

There were a few studies whose results did not directly contradict the inverse trend discussed above but suggested variations within that trend. The data from these studies have suggested that rather than a straightforward linear relationship between utilization and age and parity, respectively, the relationships tend to be U-shaped. For example, data from Bangladesh indicates that teenage mothers and "elderly" mothers (above the age of 30 years) used a rural health center more frequently than young adult mothers (21-30 years) (Chowdhury 1986). There is similar evidence from Ethiopia to show that use of formal services is highest for primiparas, decreasing for subsequent parity and increasing again for grand multiparae (Kwast et al. 1984). The U-shaped curve of utilization by age and parity has been attributed primarily to physiological "complications" that teenage primipara mothers and older grand multiparae are more prone to suffer, which increase the probability of their use of maternal health services (Chowdhury, 1986).

More often than not, however, it is likely that several factors are working together to reinforce the association between use of maternal services and age and parity, respectively. High parity women are generally older and often share a number of other common characteristics that differentiate them from lower parity women. Data from one study, for example, revealed that high parity women were not only older, but also were less educated, were more likely to be living in rural areas, and to have been assisted by a midwife at their last delivery (Warren et al. 1987). An analysis by Voorhoeve, Kars, and van Ginneken (1984) of why there is a preponderance of young women users of modern maternal services in rural Kenya concludes that this was not just

because of more modern attitudes among younger women, but also because "younger women have a better chance of reaching a hospital: they are usually in better health; they have fewer children to look after at home; and they have relatives not yet too old to look after the children, livestock, and crops" (Voorhoeve, Kars, and van Ginneken 1984: 320-321). Thus, what emerges as a strong relationship between utilization and age and parity may, in fact, reflect the confounding effect of any of a number of situational variables, rather than the effect of age or parity per se.

Education and Information

There is abundant evidence to indicate that higher education levels among women are strongly associated with greater use of formal maternal health and nutrition services. In Guatemala and Panama, in both rural and urban areas, the use of modern prenatal and postpartum services was found to be positively associated with women's education (Monteith et al. 1987). Data from Ethiopia (Kwast et al. 1984), Jordan (Abbas and Walker 1986), and Nicaragua (Wolfe and Behrmann 1984) corroborated this association for the use of prenatal services. A multivariate analysis of the World Fertility Survey data from Ecuador, Mexico, Paraguay, Peru, and the Dominican Republic found that, even after adjusting for other factors, the likelihood of a woman receiving prenatal care from a doctor or midwife or having her delivery attended by a doctor or midwife was at least 30 percent and in some cases 100 percent greater for those who had six or more years of schooling compared with those who had zero to two years of schooling (Cleland and van Ginneken 1987). In Addis Ababa, the use of hospitals as a place of delivery steadily increased from 31 percent for women without education to 88 percent for women with more than 12 years of schooling (Kwast et al. 1984). In another study, based on a sample of Nigerian women from the Ogun state, a number of factors that differentiated users from non-users of modern hospital services for childbirth were delineated (Taylor 1984). The results revealed that the women who delivered in hospitals were better educated and held higher status jobs than the women who delivered elsewhere. Even four years of primary school education seemed to increase the probability of women using hospital services for childbirth. Potter (1985) calculated that rural Mexican women of low socioeconomic status and who had fewer than four years of education were only one-ninth as likely

to have an institutionalized delivery than women of higher socioeconomic status with more education. There seems to be no doubt then that a woman's education is a crucial variable in determining her use of formal service for prenatal, childbirth, and postpartum care.

Moreover, there is evidence from Mexico and the Philippines to indicate that level of education is positively associated not only with the use of formal maternal health services, but also with its timely and frequent use (Wong et al. 1987; Potter 1985). In addition, the study from the Philippines found that in both rural and urban areas, increases in maternal education were associated with a decrease in the number of visits to a traditional practitioner (Wong et al. 1987).

While the positive effects of female education on use of formal health services have been repeatedly established, the possible reasons for such a relationship have not been as extensively explored, particularly in terms of utilization of maternal health care. The fairly extensive literature on the relationship between maternal education and child welfare offers several hypotheses, however, that have clear implications for utilization of maternal care services (Cleland and van Ginneken 1987).

In an overall review of the impact of education on demand for primary health care, Akin et al. (1985) argue that more highly educated families tend to have acquired a scientific, Western knowledge of disease, symptoms, and the importance of immunization and are therefore, more willing to accept the use of modern medical services. They illustrate this with data from the Philippines on different kinds of treatment sought for a sick child. They found that least educated mothers relied on self treatment in 45 percent of the cases. This percentage declined to 30 percent for the most highly educated mothers. In contrast, the mothers with the highest education used private modern practitioners in over 50 percent of the cases, while the least educated chose this kind of treatment only 25 percent of the time. However, these differences in choice of health care may reflect the effect of income rather than education per se.

A second hypothesis, which is an extension of the first, suggests that maternal education also changes the traditional balance of power within the family, shifting the focus away from the patriarch and the mother-in-law to the mother (Caldwell and Caldwell 1985). In short, education gives women the power and the confidence to take decision-making into their own hands. It brings about a new family system, a system in which children and women are awarded higher priorities in terms of care and consumption than in the traditional system, and a system in which modern, Western cures for illness are more acceptable. However, it may also be true that educated women are more likely to marry men who are less traditional and thereby become part of a family system which at the very outset is less traditional.

One critic, however, suggests that the hypothesis that education is responsible for changing the power structure within the family should be viewed with caution because it explains at once "too much and too little" (Ware 1984). Ware offers illustrations to show that education by itself is not a sufficient condition to create equality within the family structure. She argues that the power of women in traditional societies is often underestimated and that there is a tendency to overestimate their power in educated households that reflect some influence of Western values and culture.

A third hypothesis, outlined by LeVine (1987), specifically attempts to clarify the pathways through which education reduces child mortality. Using data from Mexico he shows that schooling trains rural children in specific verbal skills. LeVine states that schooling: "gives them the practice in using the verbal skills in non-conversational contexts and motivates them to respond verbally to novel situations" (LeVine 1987: 23). Specifically, these skills include the ability to give and follow directions. According to LeVine, women who have acquired such skills are more likely to use them in their maternal behaviors, seeking and following novel (eg. preventive rather than only curative) medical instructions. His data showed that mothers with more schooling, particularly beyond the primary level, used health services promoting child survival more frequently and effectively than those with less. Even more relevant for this paper, his data also showed that maternal schooling was a significant predictor of the use of prenatal care when other

household variables, including membership in the social security health system, were controlled.

Despite the consistently positive correlation between education and the use of formal health services it is important to remember that a woman's educational status is only one of a number of demographic variables that are strongly correlated with utilization. Variables such as a woman's occupation, her spouse's education and occupation, parity and family income, like education, have all been independently established to be correlates of utilization. Moreover, all of these variables are strongly inter-correlated, making it very difficult to isolate the individual impact of any one of them on utilization. Thus, any attempt to analyze the underlying dynamics in the relationship between education and utilization of health services must pay attention to the possibility of the compounding effects of the other user variables.

The strong consistent evidence of a positive relationship between women's education and use of formal health services raises the question of the effect of husband's education on women's use of maternal health services. Unfortunately, only a few studies have examined this variable. Data from Addis Ababa showed that the level of a woman's education was a far more significant variable than that of her spouse in determining the use of hospitals or maternal and child health clinics as places of delivery (Kwast et al. 1984). It is likely, however, that this may have been partially due to a low variance in the educational status of husbands. An interesting difference was found in a study from Nicaragua. It was reported that the level of schooling of the male partner had a far greater impact on the probability of formal medical care being sought for childbirth than for prenatal examinations. For the latter, only the woman's level of schooling and income contribution was a significant predictor (Wolfe and Behrmann 1984). Perhaps men viewed themselves as having a greater stake and interest in childbirth and therefore exerted a greater influence on the decision regarding place for delivery rather than place for prenatal care. Prenatal care may have been viewed as being directly relevant only for the woman's well-being or was simply viewed as being unimportant. Much more empirical evidence on the

impact of husband's education on use of maternal health care is needed, however, before any firm conclusions can be drawn.

So far the discussion has been restricted to the effect of formal education on utilization patterns. However, information about modern health services is often directly obtained through past experience with the formal health system or through health information obtained through an exposure to media such as radio, television, newspapers, and magazines. The media have been used in a number of developing countries to induce people to try modern health practices and services (Manoff 1985). On the other hand, the media can also have the undesirable effect of convincing individuals to adopt practices that have a high commercial value but are of dubious value in terms of consequences to an individual's health.

The effect of past experience on utilization of formal services for pregnancy and childbirth has been clearly demonstrated. It is fairly well established that among rural low-income populations "successful experience can replace formal education as a device for encouraging the adoption of new practices" (Akin et al. 1985: 91). Data from Guatemala and Panama (Monteith et al. 1987), New Guinea (Marshall 1985), and Nigeria (Taylor 1984) show that the place of the last live birth was an important determinant of the choice of services for prenatal care, childbirth and postpartum care. In general, the women who had used formal services for their last pregnancy and delivery were most likely to use those services again, while the women who used the services of a traditional midwife for their last successful pregnancy were least likely to use formal services for the next pregnancy.

As was discussed in the preceding section on service related factors, disappointing experiences with formal health services are likely to have a similar but negative effect on the choice to use them in the future. The feedback from clients regarding the lack of medical supplies, the inappropriate timings, and the general non-availability and inaccessibility of

the services were all examples of negative past experiences resulting in the under-utilization of formal maternal services.[11]

In sum, then, formal education levels of both the woman herself, and to a lesser degree, that of her spouse, and past experience with formal and traditional health practices are critical determinants of the utilization of maternal care services. While it is probable that information on health practices as presented in the media also plays a key role, there is no research evidence to prove its direct relationship to the use of maternal nutrition and health services.[12]

Income

There are few studies that have examined the direct impact of income on utilization of maternal care services. Most researchers have preferred to study income by proxy (as implied by educational level, place of residence, or type of employment) rather than directly. However, one study from Ethiopia that directly examined the relationship of income on utilization patterns concluded that, as income increased, the use of formal health services for prenatal care and childbirth increased significantly (Kwast et al. 1984) Affordability was found to be the key intervening variable in the relationship between income and utilization of formal services. Thus, in instances where maternal health services are expensive, higher income is more likely to be positively related to use of those services (or in other words, there is a definite link between low incomes and a failure to use such services); while in instances where the services are free or very low cost, the relationship is not so clear-cut.

The level of income also has an impact on utilization because of the intervening effect of time costs. Women from low income groups are known to have the least access to the necessities for survival (i.e. fuel, food, and

[11] See Buvinic, Graeff, and Leslie (1987) for a more extensive discussion on the impact of past experience with health services on the choice of care.

[12] A joint project of the University of Baja California and the University of California at Los Angeles is currently conducting an assessment of prenatal health behaviors in Tijuana and is developing materials for a mass communication/education campaign to improve maternal health and nutritional status.

water) and, therefore, have to spend proportionately more time than women from higher income groups to procure them. Jelley and Madeley (1983) argue that, therefore, their use of maternal care services is likely to be low because it threatens the family's survival by encroaching on the time available to carry out these basic tasks. They emphasize that this is likely to be more true for the use of preventive services, such as prenatal care, than for the use of curative services. The value of prenatal care lies only in averting a possible crisis while curative services have to be used because an illness has an immediate impact on the woman's capacity to provide for her family.

Research on the impact of income on the use of maternal services needs to take into consideration the fact that often in rural communities in the developing world, income includes both cash and non-cash inputs. There is evidence to indicate that traditional health practitioners are more willing to accept payment in kind and this may have an effect on choice of services for households with non-cash incomes (Akin et al. 1985). Moreover, households with low cash income might be expected to be less familiar with the market economy in general, and thus be unaware of some of the formal alternatives available in the medical market (Akin et al. 1985).

Another issue that needs to be highlighted in this context is that in many instances a mere assessment of the family income is insufficient. Often, even when there is no shortage of monetary resources within the family and, sometimes, even when the woman herself is an income earning member, she may have no access to the money and may have no say in the allocation of the monetary resources (Stinson 1986; Favin, Bradford, and Cebula 1984). Thus, even when a given family's income is sufficiently high to afford the use of maternal care services, the woman in the family may, in fact, cite expense as being the chief cause for the non-use of such services.

Thus, the complex nature of family income and the dynamics of its distribution within the family, as well as its inter-correlation with variables such as education, place of residence, and occupation, makes it a very difficult variable to isolate and analyze accurately. However, there is a clear need to investigate the effect of income on utilization of maternal

care especially since, as we have seen in the preceding section, even the use of "free" services usually involves some monetary expenditures.

Competing Time Demands

The issue of competing time demands for users has been frequently mentioned but rarely rigorously investigated in research on utilization of health services. Yet, it is potentially a critical barrier to utilization. Time is an essential ingredient in the fight for survival for most low income women in developing countries. The everyday activities, both within and outside the home, that poor women are obliged to undertake for the survival of their families are very time consuming and take up a major portion of their day (Sivard 1985; Buvinic 1983). Such a heavy workload, coupled with poor living conditions and numerous other factors, make these women the most vulnerable to ill-health and disease. And yet, ironically, to attend to their own health needs and that of their families requires time, an already scarce commodity (Stinson 1986).

The issue of competing time demands has already been raised several times in this paper. The significance of waiting time and travel time as determinants of utilization has been discussed in the preceding section on service related factors, where it was concluded that of the total cost of transportation (monetary and time), the time cost component appears to be the more significant. Similarly, a major part of the 'cost' in the actual use of a service is the time cost incurred in waiting for the service because often primary health care facilities charge no direct fees for service. Shortages of drugs and other supplies at clinics also involve a time expense for clients because of the need to make additional journeys to a private pharmacy or a laboratory to obtain the services they need.

In all these instances, the time spent is a heavy price to pay because for most women this means a reduction in the amount of time available for other more urgent and often economically productive tasks. It has been shown, for example, that for the Yoruba women of Nigeria, who are very active economically and depend on their own earnings for long-term security, health clinic attendance competes not only with domestic work but also with the

demands of their work or trade (Bamisaiye 1984) An evaluation of the nutrition education component of Project Poshak, a maternal and child supplementary feeding program in India, found that the major reasons for nonparticipation by women in the fortnightly sessions were conflicts with work and household chores, and lack of interest (Gopaldas et al. 1975 cited in Hamilton, Popkin, and Spicer 1984).

The problem of time allocation and competing time demands has received more attention in research on child health services than maternal health services. It has been argued, for example, that competing time demands may be a significant deterrent to the success of the GOBI technologies (i.e. growth monitoring, oral rehydration therapy, breastfeeding, and immunization) recommended for child survival and health, and that if such preventive measures are to be effective, there is an urgent need to understand their time cost to mothers particularly since they need to be done repeatedly and as part of the mother's routine (Leslie, forthcoming).

There is evidence to support this hypothesis from at least two recent studies. One is a study of the characteristics of users and non-users of child immunization services in Haiti. Focus group research revealed that "competing priorities" in the everyday lives of mothers was by far the most significant barrier to immunization use. Daily life activities (such as acquiring and preparing food, attending to children's needs, and doing household chores), and among poorer families subsistence needs (that is, the daily acquisition of food and fuel supplies) were considered to be more compelling and higher priority demands than spending half a day at a health post for an immunization. Market activities and family problems (such as the ill-health of a family member) were also found to compete heavily for women's time. It is interesting to note that besides the physical workload involved, the women of this sample also spoke of a "psychic overload" that "discouraged them from even thinking about non-essential things that should be done" (Coreil 1987a). A similar finding concerning the significance of competing demands on women's time comes from a study of the effect of time and resource availability on use of oral rehydration therapy to treat diarrhea in the Gambia. Using a multivariate approach to control for other factors, this study found that if a woman had a heavy workload she was constrained to use

traditional methods to treat diarrhea, but if she had less work and more time available she used oral rehydration therapy (ORT) or went to a health clinic. The research also addressed the question of the effect of income on choice of therapy and found that, given equal time constraints, a woman who had more cash available was more likely to use a health clinic than ORT (Marlett 1988).

In a study referred to earlier on the importance of budgeting for time costs when planning health services, Ayalew (1985) strongly emphasized the competing demands on women's time. He observed that, in Ethiopia, the major reason for the lack of success of health services, including maternal care, is the failure to understand and accommodate normal patterns of time use followed by the communities they serve. Thus, he recommends that an effective way of planning primary health services is to prepare a community time budget (i.e. a balance sheet of community activities), with alternative uses and effective allocations of time listed. In this way the opportunity cost of using a health service could be estimated and taken into consideration when planning where and when to make services available.

When considering competing time demands, the varying effect of seasons on the utilization of health services also needs to be identified. In a study of the impact of seasonality on the use of a maternal and child health clinic in Ghana, it was reported that, during the rainy season, because women are busy with trading and farming, the opportunity cost of seeking health care is significantly higher than in other seasons (Gordon 1986). In that season, therefore, women considered it worthwhile to attend the clinic only when a reasonable amount of food was distributed by the clinic. In contrast, data from Bangladesh show that the free services of a primary health center were used <u>more</u> during the rainy season than in other seasons (Chowdhury 1986). This was attributed to the scarce economic resources during that season. In winter, on the other hand, because productivity and income are high, the private clinics were preferred over the free services of the primary health center. The impact of seasonality on women's work patterns and household monetary resources are critical factors that need to be better understood to maximize utilization of maternal care services.

Sociocultural and Attitudinal Factors

An important factor in the utilization of maternal health and nutrition services is the sociocultural background of the user, which determines the beliefs, attitudes, and perceptions she has concerning the service being offered. These sociocultural or attitudinal factors as they relate to utilization of MCH services, have been the focus of a number of studies (Pelto 1987; Finerman 1984; MacLean 1974). Although extremely important, they are often difficult to investigate and, by their very nature, do not lend themselves to easy generalizations because they may differ significantly from one part of a country to another, to say nothing of from one country to another.

As discussed in the earlier section on provision of maternal care, when a formal maternal care service is introduced to a community it is not entering a vacuum. There is usually an entire indigenous system of health care in place which, with varying degrees of adequacy, tends to the needs of women during pregnancy and childbirth, as well as a set of practices and beliefs associated with pregnancy and childbirth that have nothing to do with medicine or health care (Pillsbury and Brownlee 1989). Hence, a new source of maternal care might be seen to be in direct competition with the existing system of beliefs and care. Whether or not the new service is used often depends on the subjective judgement of the user as to the appropriateness of that service vis-a-vis the existing indigenous maternal care system. The extent to which the formal health service is congruent, or not in sharp conflict with some of the more fundamental indigenous tenets of health care, is one important determinant of its acceptability. A service that ignores the local health care system is likely to shut out its potential users from the very outset even when it meets objective medical standards of excellence of service. The important elements, therefore, are flexibility and acceptance. A formal service that is respectful of the role played by traditional systems of health care and one that is flexible enough to incorporate medically harmless beliefs and practices from that system is most likely to succeed in winning the acceptance of the community.

In most developing countries, one of the fundamental reasons for the distance between formal maternal care and its users is the perceived "medical" nature of this kind of care. Formal maternal care services, unlike traditional services for maternal care and childbirth, are usually offered as medical interventions that fall within the domain of "illness and disease". This runs contrary to the traditional belief that is widely prevalent in the non-Western world that pregnancy and childbirth are natural events, not illnesses (Favin, Bradford, and Cebula 1984). Traditional systems do recognize the possibility of life-threatening risk or complication in childbirth, in which case specialists (such as herbalists and traditional healers) are called upon. However, for normal, uncomplicated pregnancies, traditional birth attendants and older women with childbirth experience are considered to be sufficiently qualified to meet the needs of pregnancy, childbirth, and postpartum care (Koblinsky and Corbett 1987; Abu-Zeid and Dann 1985; Onuoha 1981).

This perception of the need for specialist care only for situations of crisis is directly reflected in statistics on patterns of utilization of formal maternal services. As expected, formal services are used more often for crisis-intervention and curative care (as in instances of unexpected bleeding, pain, or obstructed labor), rather than for routine childbirth assistance (Jelley and Madeley 1983). As mentioned earlier, it is also interesting to note that formal services are used more often for prenatal care than for routine childbirth services. In fact, there appears to be a hierarchy in terms of the utilization of different components of formal maternal care services. Curative and emergency care is utilized the most often, prenatal care is second in this hierarchy, and childbirth services are used least often (Royston and Ferguson 1985). As the statistics on coverage discussed earlier indicate, data on the utilization of postnatal care is too limited to draw any firm conclusions. The available statistics do suggest, however, that formal health services are used very rarely for postpartum care.

Data from many developing countries indicate that for normal, uncomplicated pregnancies, women generally prefer home-based childbirth to institutionalized or hospital based delivery. In contrast to this, prenatal

care and risk-monitoring from a health clinic seems to be distinctly more acceptable. Apparently formal services are perceived to be more effective for providing preventive care than for providing delivery care (except, as mentioned before, in the case of emergencies). In fact, there is some preliminary data from the Philippines to suggest that women may accept formal prenatal care precisely to ensure a normal, uncomplicated, home-based birth (Violeta Villaroman-Bautista, personal communication). This suggests the possibility that an increase in the use of formal prenatal services may coincide with, and in fact, be motivated by the desire for, a decrease in incidence of hospital or clinic based deliveries. Much more data is necessary before this hypothesis can be proven, however.

A frequent explanation offered for the higher use of formal prenatal services as compared to childbirth services is that medical personnel are perceived as being more capable of meeting physical health needs, while traditional practitioners are viewed as being more capable of providing moral and spiritual care and support. Since child delivery is seen as requiring more of the latter kind of care, traditional practitioners are preferred during labor and delivery. Prenatal care, on the other hand, with its emphasis on the monitoring of physical health is perceived to be adequately taken care of by the formal health care system (Mutambirwa 1985).

Judgments by the user concerning the value of one source of care versus another may also be determined by considerations other than perceived medical need or sociocultural orientation. In some countries, the formal health care system is designed such that access to services for childbirth is contingent upon use of prenatal care sources. For example, in Jamaica (where traditional home-based deliveries are rare because of the almost complete disappearance of a traditional maternal care system) women are encouraged to "book" for prenatal care to ensure advance registration for a hospital-based delivery. It is reported that, in fact, "booking" for prenatal care is perceived by the local population as being a prerequisite for good, reliable care during labor and childbirth (Joan Rawlins, personal communication). Thus, data from Jamaica does indicate a high rate of registration for prenatal care but a closer analysis reveals that a large percentage of the women come to the clinic only in the last trimester of pregnancy. Apparently it is not the

value of prenatal care that motivates these women to use prenatal services but the fear of the possible consequences of not registering in terms of losing access to hospital deliveries.

In Papua, New Guinea, where traditional alternatives for childbirth do exist, women also see use of childbirth services as being linked to use of prenatal services. It is reported that fear of reprimand from health personnel for not having used prenatal services regularly prevents women from registering at a hospital or clinic for the childbirth (Marshall 1985). It appears, then, any facility that makes the use of its labor and delivery services contingent upon the use of its prenatal services may not succeed in increasing the appropriate utilization of either.

Despite evidence of a relative preference for one source of health care over the other for specific aspects of maternal care, it is well established that rather than using only one kind of health care for a particular need, people usually combine the use of both traditional and modern health care methods (Kroeger 1983).[13] Thus, even while attending the health clinic for prenatal care, a woman may continue to follow the advice of the local traditional birth attendant regarding food taboos and restrictions or the usefulness of particular kinds of herbs. Similarly, as mentioned earlier, women may intend to deliver at home but turn to the formal care system in the event of an emergency.

In this context, it is important to remember that in some cultures the decision regarding the choice of health service may not be made by the woman herself but by other family members or even occasionally by influential groups in the community. For example, in Sierra Leone the Sande Society, a women's community group bears the responsibility for the training and social indoctrination of all females in the community, including their fertility behavior (Little 1951). In such cases the cultural perceptions of significant family members or such community groups are more critical for utilization decisions than the perception of the woman herself. The study from Nicaragua cited earlier in this paper, revealed that the husband plays a more

[13]The concurrent or serial use of different healing systems, referred to as "medical pluralism" by Kroeger, is a typical feature of traditional societies in the developing world.

significant role in the choice of a service for childbirth than in the choice of a service for prenatal care (Wolfe and Behrmann 1984). Thus, in such a situation the husband's perception of the comparative usefulness of traditional versus modern health care services would be more crucial for childbirth while the wife's perception would be more critical for the choice of prenatal care.

The perception that formal maternal care "medicalizes" an event that is traditionally considered a natural phenomenon is not the only sociocultural barrier to the utilization of formal services. There are other characteristics of formal maternal services that contribute to creating a dissonance in users, frequently by opposing or ignoring the value of harmless traditionally held beliefs and practices associated with maternal care. While the majority of such dissonance-creating contradictions are culture specific, there are also a number that are common across a wide range of cultures.

In most cultures, for example, privacy, modesty, and female seclusion are believed to be essential ingredients in the experience of childbirth. Unfortunately, most formal maternal services, do not observe these basic tenets of traditional care. A typical experience is that of a hospital providing free health care to Saraguro Indians in Ecuador (Finerman 1984). In this community, as in many others, pregnancy is viewed as a private, all-female event, where the modesty of the woman must be protected at all times. Generally speaking, childbirth takes place within the seclusion and security of a woman's home, attended by a familiar birth attendant, and surrounded by family members who provide moral support during labor and the delivery. Usually the woman is covered completely during and after childbirth, not only for reasons of modesty, but also to protect the mother and unborn child from the dangerous "cold" influences to which they are particularly susceptible during childbirth. In sharp contrast, child delivery at the hospital requires a public setting for labor, which violates all concerns for privacy and modesty. The woman is far away from the familiar surroundings of her home, attended to by a stranger (who often is male), who insists that she disrobe and wear an unfamiliar garment that is perceived to be inadequate to protect her and the child from the "cold" influences that could bring illness and disease. The administering of enemas and episiotomies, as well as the

requirement to deliver in the supine position (as opposed to the traditionally accepted squatting posture) has been reported to further increase a Saraguro woman's sense of shame and alienation.

An additional source of dissonance in the Saraguro Indian example is that hospital personnel, in keeping with Western medical beliefs, attribute the success of the delivery and the health of the fetus directly to the dietary and hygiene practices of the mother during her pregnancy, whereas, according to the indigenous belief system, this responsibility belongs more to the unborn fetus. By emphasizing maternal rather than fetal responsibility and by insisting on medical practices that are perceived as unfamiliar, embarrassing, and even dangerous, the formal maternal care system was found to impose a sufficiently high level of stress to deter the Saraguro women from utilizing the hospital facility. Thus, the inability of the formal system to willingly and intelligently integrate the indigenous beliefs and practices resulted in underutilization of an otherwise available, affordable, and accessible facility (Finerman 1984).

Beliefs concerning appropriate female behavior or the appropriate stage at which to publicly announce pregnancy may also prove to be a barrier to utilization of routine maternal care services. In Muslim communities the practice of "purdah", which keeps the woman in seclusion from strange men, prevents women from using any prenatal, childbirth, or postnatal services of a facility run by male personnel (Claquin 1981). In Saudi Arabia, the scarcity of female health workers has hindered the development of maternal child health services, and in Bangladesh male health workers are unable to make home visits because women are usually at home alone during the day (Stinson 1986). An evaluation of the Project Poshak supplementary feeding program in India revealed that pregnant women were less likely than lactating women to participate in the program. This was found to be due partially to a tradition of not announcing pregnancy, and partially to a fear that a large fetus would make for a difficult delivery (Gopaldas et al. 1975 cited in Hamilton, Popkin, and Spicer 1984). Other widely accepted cultural beliefs, such as food taboos, the hot and cold food classification system, and the necessity of a postpartum period of isolation (in most cultures for a period of 40 days) to protect the mother from illness and to prevent "pollution" of other family

members, are rarely respected by the formal maternal care system (Favin, Bradford, and Cebula 1984; Finerman 1984; Ruffing and Smith 1984).

Propensity to use a health service has also been shown to be determined by the nature of the interaction between the client and the health personnel. In most cultures, the traditional birth attendant is a familiar, respected community member who is a source of great moral and spiritual strength to a woman in labor (Pillsbury and Brownlee 1989; Onuoha 1981). In contrast, it has been reported that medical personnel at modern health facilities are often distant, impersonal, and too busy to spend more than a few moments with each client (Attah 1986; Bamisaiye 1984; Misra 1983; Lasker 1981). This has repeatedly been reported to be a major cause of underutilization of formal maternal services (Attah 1986; Finerman 1984; Lasker 1981). In addition, the frequent insensitivity of the health personnel to cultural beliefs and practices is often responsible for formal services being viewed as low quality in comparison to the services offered by traditional practitioners (Ruffing and Smith 1984). Not only must providers of maternal care know about such indigenous customs, they must also be trained to develop a keen understanding and an honest acceptance of the obvious importance to their clients of the sociocultural context in which they live, as has been done in Bolivia (Bastien 1987).

A somewhat different kind of a sociocultural barrier to the utilization of maternal health services was highlighted in a study from Sudan (El Hakim 1981). The fear of being exposed as illiterate and the social embarrassment of being poorly dressed in front of health care providers who were from a higher socioeconomic class was found to deter women from using formal maternal care. A shyness about consulting health personnel who were viewed as belonging to a higher social level was also reported to be a barrier to the utilization of health services in remote rural areas of the Philippines (Mangay-Angara 1981). Interestingly, a similar finding was reported in an evaluation of a child immunization program in Haiti (Coreil 1987b). The fear of ridicule and an apprehension about being criticized for taking a barefoot, poorly nourished child to a public health post was found to be a key factor preventing women from using immunization services.

Another interesting example of the effect of cultural factors on utilization is the Bangladesh experience with tetanus toxoid immunizations for pregnant women (Rahman 1981). The low acceptance rate of tetanus toxoid among pregnant women in Bangladesh was attributed to an erroneous subjective judgment by the community of the quality of this immunization. Data revealed that due to the imprecise definition of tetanus in the local language, the community did not see evidence of the high efficacy rate of tetanus immunizations claimed by health workers. Women mistakenly believed that tetanus injections were intended to protect against three traditionally recognized syndromes which had symptoms that overlapped with those of tetanus. But, in fact, these syndromes were often caused by non-tetanus related diseases. Thus, when mothers misdiagnosed neonatal deaths among tetanus immunized neonates they mistakenly believed that the immunization was ineffective.[14] Other erroneous cultural perceptions, such as the belief that accepting any injection during pregnancy will harm the fetus or cause severe bleeding, have also been known to lead to the non-acceptance of tetanus toxoid immunization. In view of the fact that tetanus is the cause of a large percentage of neonatal deaths and a smaller, but not insignificant, number of maternal deaths, and given the fact that the technology to prevent it is known and available, an awareness of such cultural barriers to acceptance is particularly important. Health education programs about tetanus immunization could be designed to specifically alleviate such fears and clarify mistaken beliefs.

In some health programs in developing countries steps have been taken to ensure that formal maternal care services are culturally more acceptable. Several health centers have developed facilities that permit women to bring family members to live in a "lying-in village" or a maternity waiting home near the hospital during the last weeks of pregnancy, so that medical care is near and yet the women do not feel isolated from their communities (e.g. in Zaire as described by Favin, Bradford, and Cebula 1984 and by Duale, personal

[14]In the Bangladesh study another cultural practice was identified as being the cause for the failure of women who did accept the tetanus immunization to receive the two injections necessary for complete tetanus immunization. Pregnant women, typically, moved to their parents home closer to the time of delivery. Thus, they were no longer in the initial clinic's catchment area and so the second injection could not be administered.

communication). Other programs have recognized the traditional significance of the placenta and other products of birth, by allowing relatives to dispose of these in the necessary ritualistic manner even in institutional deliveries (e.g. in northern Mexico described by Favin, Bradford, and Cebula 1984). Cultural acceptance is also gained by making special attempts to recruit more women as community health workers (e.g. the recruiting policy adopted by Streehitkarini, an organization that works to improve the health status of slum dwellers in Bombay, India; as described by Mulgaonkar et al. 1988), and by integrating traditional birth attendants into the formal health care system (e.g. in northeast Brazil, described by Araujo et al. 1983, in India, described by Bhatia 1985, and in Sri Lanka, described by West 1983).

CONCLUSION

The research reviewed in this paper clearly shows that the current limited coverage of formal maternal care services in developing countries is due to not only limited availability, but also underutilization of the services that do exist. However, before summarizing our conclusions concerning the most important barriers to utilization of formal maternal care services, how such barriers might be overcome, and what issues need to be addressed by future research, we need to point out that some of what is considered to be "underutilization" of formal maternal care services may actually be appropriate.

It is neither medically necessary nor economically realistic to aim for nine to twelve prenatal visits, a hospital delivery, and one or more postnatal visits for each pregnancy experienced by a woman in the Third World. Depending on a woman's overall health and nutritional status, and her risk factors during any given pregnancy, a minimal number of prenatal visits and a home delivery attended by a well trained and well equipped birth attendant may not only be acceptable, but even optimal. Nonetheless, a substantial number of women in developing countries need and are entitled to much more intensive contact with the formal health care system during pregnancy, childbirth, and/or the postnatal period (in part due to the morbidity and malnutrition with which they enter their pregnancies). Underutilization of genuinely needed maternal care, while not always easy to distinguish from "appropriate underutilization", clearly does exist, and it is towards the resolution of this problem that the conclusions and recommendations below are offered.

We would also like to mention two major caveats concerning the quality and breadth of the research reviewed before proceeding, since they need to be kept in mind as overall qualifiers to the conclusions and recommendations below.[15] The first major limitation concerns the narrow conceptual focus of most of the studies reviewed. Almost all of the research came out of a particular disciplinary framework, and as a result, the majority of the

[15]Some additional methodological and conceptual weaknesses of the studies are discussed in the final subsection of the paper in the context of recommendations for future research.

studies focussed on only a few of the many possible determinants of utilization of maternal care services. Therefore, while we can feel some confidence in concluding that a factor found to be a significant determinant of utilization across a number of studies is likely to be important, we can feel much less confidence concerning the relative importance of different factors, or in discounting factors that did not happen to have been emphasized by any of the studies reviewed.

Second, there are significant imbalances in the research reviewed, both geographic and in terms of type of maternal service. A reasonably large number of studies were found from South Asia, Latin America, West Africa, and East Africa while very few were found from East Asia, the Middle East, North Africa, Southern Africa, and the Caribbean. In addition, there were more studies on utilization of childbirth services than on utilization of prenatal services, while studies of factors affecting utilization of either postpartum services, or nutrition services (by pregnant and lactating women) were even more limited. Therefore, particularly for those parts of the world or those services least well covered by the studies reviewed in this paper, more research is clearly needed.

Barriers to Utilization of Maternal Care

Studies on barriers to the utilization of formal medical services can be classified into two broad types: those that emphasize the role of socioeconomic and cultural influences and those that focus on characteristics of the health service itself (Young 1981). The former typically conclude with policy recommendations that emphasize either socioeconomic development or education of users and, in effect, place the responsibility for underutilization outside the formal health system. The second class of explanations, on the other hand, places primary responsibility for low rates of utilization, as well as for changes that might increase utilization on the health care services themselves (Lasker 1981). Overall, the research reviewed in this paper suggests that service related factors present a greater barrier to utilization of formal maternal care services than do user related factors. Both appear to play an important role, however, and the apparent greater

significance of service related factors may, to some extent, simply reflect the greater number of studies that have focussed on such factors.

Service Related Factors versus User Related Factors

Despite the disparate cultural, political, and economic contexts in which the numerous studies reviewed here were carried out, service related factors such as physical distance, hours of availability, and transportation difficulties, together with long waiting times and inadequate supplies, emerged repeatedly as key factors constraining the use of maternal care services in the Third World. The significant deterrent effect of these facility related inadequacies was frequently compounded by the poor technical and interpersonal skills of the providers of maternal care (who themselves often suffered from low morale due to inadequate training and poor living circumstances) and the corruption that seems to be widespread within the formal health system.

The main user related factor that emerged as an important deterrent to utilization of maternal care services was limitations on women's time. For the majority of women in developing countries, time spent traveling to a health center, time spent waiting to see a health care provider or receive a nutritional supplement, or time spent seeking out prescribed tests or medications means a reduction in the amount of time available for day-to-day tasks that are essential for the family's survival. The importance of competing priorities for a woman's time appears to be one of the key barriers to the use of maternal care services, although more so for the use of non-emergency, preventive and surveillance care during the prenatal and postnatal periods than for child delivery services.

The effects of two interrelated demographic variables, age and parity, on utilization underlined the significance of competing priorities for women's time. Having many children increases the demands made on a woman's time and consequently increases the likelihood that maternal care services will not be used because of the direct time costs involved. It is likely that the strong negative correlations between utilization and age and parity, respectively, were only another indication of the effect of competing time demands rather than evidence of an attitudinal effect of increasing age on utilization.

Based on research available to date and recognizing that there are significant differences from one setting to another, our overall policy recommendation is that, where maternal nutrition and health care services are available but underutilized, the first step should be to look for service related factors that may be deterring their use. Not only do the studies reviewed in this paper suggest the greater importance of service related factors than user related factors as barriers to utilization of formal maternal care services, but there is also probably more that can be done to influence these service related factors, particularly by policy makers and program planners within the health sector.

In the long run, it is unquestionable that higher levels of education for both men and women, higher incomes, and an increase in the status of women would dramatically improve, not only utilization of maternal nutrition and health care services, but also women's health and nutritional status in general. In the short run, however, while these goals are being actively pursued, there are a number of practical steps that could be undertaken to increase the likelihood that women will utilize formal maternal care services when needed.

Patterns Specific to Maternal Care Services

One of the key questions that we sought to answer in this review was whether or not there are important differences between patterns and determinants of utilization of maternal care services and utilization of other health services. While we found many similarities, there are also some differences worthy of note.

One particularly striking finding is the consistently greater use of prenatal than childbirth services. Most analyses of demand for health care conclude that utilization of formal, Western based curative services is significantly greater than utilization of preventive services. Akin et al. express a widely accepted opinion in the following explanation: "From a demand perspective, the essential distinction between these two types of services is that the value of preventive care has to be demonstrated either by education, salesmanship, or experience, while the demand for curative care already exists

because it is generated largely on the basis of felt need." (Akin et al. 1985; 169). Most, although not all, prenatal (and postnatal) care is preventive. Childbirth services, on the other hand, while not curative in the usual sense, have more in common with curative than preventive services; childbirth is an acute event, one that can neither be postponed nor ignored, and one that is recognized in traditional societies as well as by Western medicine to be potentially life threatening. Therefore, a reasonable expectation would have been that, where both are available, childbirth services would be seen as more important and therefore would be used more than prenatal services. However, just the opposite appears to be the case. With the exception of recognized obstetrical emergencies, formal childbirth services are utilized less than formal prenatal services.

The surprisingly low level of utilization of formal childbirth services seems to be due to a combination of factors, not all of which may be equally important in all settings. One reason is that, in most cultures, there is a well established, well accepted traditional source of support and care during childbirth, while there is rarely a similarly well developed alternative source of prenatal care. A closely related factor is that there are strongly felt needs for privacy, emotional support, and fulfillment of certain rituals to protect the mother and infant, which are not met by the formal health system. Another key factor, which is particularly important in rural communities where the nearest hospital or clinic may be several kilometers away, is the difficulty women have reaching a source of formal care once labor has begun. Finally, there are more likely to be direct or indirect fees for childbirth than for prenatal services.

Both the gender and attitude of health personnel emerge as even more important determinants of utilization of maternal care than of utilization of other health services. In addition, the studies reviewed clearly revealed that, while the attitude and gender of health personnel was important at all stages, it was particularly critical for childbirth. Women typically need more personalized, emotionally supportive care during labor and for delivery than during the prenatal or postnatal stages, and there is a strong sense in many cultures that childbirth should be an all female event. The fact that indigenous traditional birth attendants are usually female, familiar, and will

come to the woman's home are important reasons that women tended to rely on them in preference to maternity clinics or hospitals.

Another way in which utilization of maternal care services (childbirth and prenatal) appear to differ from utilization of general health care services is in the significance of transportation. Pregnancy and labor are physical conditions that make walking over long distances and rough terrain (which is the usual way of getting to formal health centers in developing countries) a formidable task that may even have serious negative repercussions for the health of the woman. Bumpy rides on a bicycle, motorcycle, or beast of burden, which are often the only alternatives, can be just as risky as well as sometimes culturally unacceptable. While the need for appropriate transportation is well accepted for obstetrical emergencies, it is not as widely recognized that pregnant women, even when healthy, are just as dependent on appropriate means of conveyance. As a result, the success of any maternal care program is crucially linked with the adequacy and reliability of the transportation system as well as the provision of services as close to where women live as is feasible.

Overcoming the Barriers

The extent to which poor coverage of maternal care is due to underutilization rather than unavailability of services, as well as the relative importance of specific determinants of utilization, will both differ from one setting to another. Nonetheless, currently available evidence suggests that implementation of some or all of the following recommendations would have a substantial impact on increasing utilization of needed maternal care, and therefore on reducing the morbidity and mortality associated with pregnancy and childbirth.

1. In many places, primary emphasis should be put on overcoming the problems that women face in accessing maternal care services. The critical importance of reliable and effective transportation for the success of a maternal care program cannot be emphasized enough. Distances that do not hinder accessibility under normal conditions become almost insurmountable barriers for a woman who is in the

latter stages of pregnancy or in labor. For prenatal and postnatal care mobile teams that visit villages or outlying urban neighborhoods can dramatically increase coverage, provide community education, and support and supervise TBAs. The mobile MCH teams in the Gambia are one of several successful examples of this approach (Beeman et al. 1978 cited by Favin, Bradford, and Cebula 1984). For childbirth, particularly for obstetric emergencies, organization of an emergency transportation system, using vehicles suitable to the local terrain, is increasingly being recognized as a key to reducing maternal mortality. It is essential, of course, that the necessary surgical skills and equipment be available at the point of referral.

2. There is an urgent need to incorporate greater numbers of women as health workers, as this will help somewhat to bridge the cultural distance between providers and users of maternal care services. Because of the difficulties involved in relocating female health personnel, it is often easiest to select and train local women. In addition, women who belong to the community they serve will be more aware of the sociocultural expectations of users than health workers who have been imported into the community. Therefore, traditional birth attendant (TBA) training needs to be actively pursued. Incorporating TBAs, where they are widespread and well established, into the health system is one solution to reducing the wide physical and social gap between women and formal health services. It seems more realistic to plan to upgrade the skills of TBAs through training rather than to plan to teach the basics of any indigenous culture to a health worker who is an outsider to the community. However, it is also important that TBAs be supported with adequate and reliable transportation services and specialized health personnel and equipment in order to deal with emergencies that they are not equipped to handle. The TBA training project in the state of Ceara in northeast Brazil is one example of successful intervention and referral at the community level (Araujo et al. 1983). Streehitkarini, a women's organization that introduced maternal care services to slum dwellers in Bombay, is another

example of the successful integration of local women as community health workers (Mulgaonkar et al. 1988).

3. There is a critical need for community education, both to inform women about the risk factors in pregnancy (and thereby increase the possibility of self-referral) and to increase the use of safe hygiene practices during childbirth. This need is all the more urgent given the fact that a large percentage of births in the developing world continue to take place at home, often without even a traditional birth attendant present. Recognizing this, the World Health Organization has designed and distributed simple delivery kits for use at the community level (WHO 1987b). In Zimbabwe, for example, the kits have been given to all mothers in the last month of pregnancy. Furthermore, there is a need to find more creative ways of providing community education so that the time costs to women who participate in such programs are not unrealistically high. One example of a successful, innovative method is the use of nutrition education audio cassettes played at an outdoor public laundry used primarily by women on a plantation in Guatemala (Colle 1978). More initiatives such as these are necessary to help women take a more active role in ensuring their own health and survival.

4. An effort needs to be made within the existing budgetary constraints, to provide suitable and adequate economic remuneration to health personnel delivering maternal care services, and to ensure the smooth flow of supplies. Reasonable possibilities for advancement as well as adequate and secure housing are also important. These are critical to maintain the credibility and morale of health personnel and to stem the spread of corrupt practices. The success of SEWA-Rural, a grass-roots community development organization in Gujrat, India, has been largely attributed to the attention given to the needs of their personnel (Desai 1988). Recreation programs and comfortable housing contribute to maintaining a high level of commitment and motivation among the workers.

5. Maternal nutrition and health care services need to be reorganized so as to make them less expensive in terms of the time costs to women. This can be achieved by expanding the number of hours that a clinic is open and also by organizing the separate components of maternal (and perhaps child) care into one comprehensive package. In this way, if a woman visited a center for curative care, she could receive any other services she or her children needed during the same visit and thereby avoid the need for additional visits for each separate service. Mobile maternal services, which were recommended above to overcome the transportation difficulties during the prenatal and postnatal periods, are another important way to reduce the time costs to women.

Recommendations for Research

A paper such as ours, which has reviewed and analyzed studies that are of uneven quality and from a range of different settings, must tread a fine line between unwarranted generalizations and unwillingness to draw any conclusions at all. In the preceding subsections, we have presented preliminary conclusions concerning the key barriers to utilization of maternal nutrition and health care services in developing countries, and have recommended some possible approaches to overcoming these barriers. We feel that these conclusions and recommendations accurately reflect information available to date, and hope that they will provide a useful starting point for policy makers and project personnel who are currently seeking ways to improve the coverage of maternal care in the Third World.

At the same time, this review of existing studies makes it clear that more and better research on determinants of utilization of maternal care services is urgently needed. Therefore, in this final subsection of the paper, we offer recommendations for future research, both in terms of methodological improvements needed and key issues to be addressed.

Methodological Issues

A major limitation of the majority of the studies reviewed in this paper was the simple correlational approach taken by the researchers to the analysis of their data. In most of the studies, differential utilization was explained by identifying variables that were found to co-vary with specific health care choices, and on that basis alone, it was concluded that such variables were determinants of utilization. Furthermore, many of these studies used a simple bivariate approach to analysis of the data, making it difficult to assess the relative strength of the association of different variables with utilization, much less how the different variables might interact. Therefore, most existing studies have only been able to highlight certain factors as being significantly related to utilization or non-utilization of maternal health or nutrition services; they have provided little insight into the dynamics of utilization of formal maternal care.

There is a need for future researchers to put more emphasis on methodological approaches that go beyond mere correlational analyses of a limited number of factors. Now that it has been shown that underutilization is a significant component of the limited coverage of maternal care, it is important to incorporate into future research both more open-ended data collection methodologies and more sophisticated multivariate data analysis techniques, which can better explore the influence and relative significance of a wide range of factors affecting utilization.

As mentioned earlier, the number of studies reviewed that looked at service related factors as determinants of the utilization of maternal care services was greater than the number that looked at user related factors; and within the user factors, more attention seems to have been given to demographic variables and personal characteristics such as age, parity, and education than to sociocultural and attitudinal factors. Moreover, few of the studies, whether they focussed on service or user related factors or both, made an attempt to explore the subjective assessment of these factors from the user viewpoint. For example, most of the studies that looked at the impact of waiting time merely quantified the amount of time spent waiting for a particular service, without seeking explanations of the meaning of the

different lengths of waiting time to the users or whether, in fact, a so-called "long" waiting time was perceived as being a deterrent by users. There is the possibility that the interpretation of a long waiting time as being a negative experience is a culturally biased, Western interpretation and may not be relevant in all settings.

One of the clearest conclusions to emerge from this review is the need for future research to analyze and understand utilization patterns from the user perspective. Thus, even though service factors emerged as the key deterrent to utilization of maternal care services, the only way to understand how and why they operate as barriers to utilization is to analyze how they are perceived and interpreted by the users. Cultural norms and beliefs (not only of reproductive age women, but also of influential members of their families and communities), life style patterns, and perceived needs will all modify the effect of service variables on utilization in important ways.

There are a number of innovative methodological approaches that have already been adapted for use in health research in developing countries that would greatly strengthen future research on determinants of utilization of maternal nutrition and health care services in the Third World. One such approach is focus group research, which can be particularly useful in the early stages of a study, when it provides a fairly rapid, structured way to obtain information about a wide range of variables affecting utilization. Attah (1986) in his study in Nigeria used the focus group method in a particularly creative way by exploring the subjective perceptions of need for and the quality and cost of existing community health services both among the providers and the users of the services. However, Timyan (1987) in a study in Central Cote d'Ivoire emphasized the need to modify and adapt the focus group research technique, particularly in societies that rely entirely on oral communication.

The cognitive ethnographic approach used by Young (1981) is another useful technique. Its strength is in providing a way to explore how choices are made among alternative courses of action without making any *a priori* and perhaps unrealistic assumptions about the decision process. Young used this approach quite successfully in his research on illness behavior of rural

Indians living in west-central Mexico. Based on the answers to three questions (e.g. what are the perceived alternatives for care; what information is considered in making a choice; and how is this information used to make the choice) a decision making model is formalized. This model is then tested using independent data based on the actual behavior of members of a given population.

There are additional methodological techniques that would be valuable in research on utilization of maternal care services, and are adaptable to most field situations likely to be encountered in developing countries. Two that seem to be particularly promising in providing relatively efficient, low cost ways of addressing some of the weaknesses of previous studies are the recently developed anthropological research field guides entitled *Rapid Assessment Procedures for Nutrition and Primary Health Care* (Scrimshaw and Hurtado 1987) and the random spot observation technique for determining time allocation, recently used in a study in Kenya of functional consequences of malnutrition (Baksh and Paolisso 1987).

Priority Research Issues

This paper has suggested a long list of interesting questions that could be addressed, both to determine what is an appropriate level of utilization of formal maternal care in the Third World, as well as what the key factors are that influence utilization of such services by women. Since available sources of maternal care (both formal and traditional) as well as geographic, social, and economic circumstances will differ significantly from one region to another, research priorities will have to be determined on a country specific basis. However, we would like to suggest a few questions that have emerged as notable gaps in the information available to date, and that are likely to be relevant in most settings where efforts are underway to improve the coverage of maternal care:

1. How do women and other household members perceive dietary needs during pregnancy and lactation, and what factors influence women's participation in supplementary feeding programs during pregnancy and lactation?

2. How many contacts occur, what services are provided, what are women's perceptions of the quality of care, and what is the nature of the interaction in most formal prenatal and postnatal care in developing countries?

3. What role do husbands, other household members, and other community members play in decisions concerning utilization of formal maternal care services?

4. What effects do time costs and competing time demands have on women's utilization of maternal care services, and do these effects differ significantly between use of prenatal, childbirth, and postnatal services?

5. What is the relative effectiveness of broad based community education versus training of traditional birth attendants in increasing appropriate use of formal maternal care services, particularly hospital referrals for high risk deliveries?

6. How can non-harmful traditional practices be flexibly incorporated into formal maternal care services?

7. What innovative strategies have been effective in addressing the obt tacles to utilization of maternal care services, such as transportation, time conflicts, and morale of service personnel.

It is our hope that by addressing these and other questions, current understanding of key barriers to utilization of maternal care services can be increased, ways to overcome these barriers can be found, and the urgent health and nutrition needs of women in the Third World can be better met.

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