Productivity and Costs for Family Planning Service Delivery in Bangladesh: The Government Program

Technical Report

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B

PREFACE

The study on Method and Delivery Specific Costs of Family Planning in Bangladesh is the first of its kind conducted in this country and perhaps in Asia. The study was carried out by the Population, Development and Evaluation Unit (PDEU) with technical assistance from Family Health International (FHI) and Associates for Community and Population Research (ACPR) and technical and financial assistance from USAID. The study provides policy makers and planners with information on the costs of various contraceptive methods through different delivery systems in order to improve the efficiency of family planning service provision. This report presents information on the costs of outputs produced by both the home and clinical service delivery systems managed by the government of Bangladesh (GOB) and suggests ways that costs could be lowered by producing services more efficiently.

The study is very important and timely in the sense that with the maturity of the program the demand for services is increasing tremendously as more and more women enter the reproductive ages. Meeting this increasing demand while at the same time conserving resources will require efficient utilization of clinical facilities and of home service delivery workers.

The preliminary findings of the study for the home service delivery and clinical service delivery programs, were presented in two separate dissemination seminars held at the end of 1994 and in mid 1995. Renowned population specialists from the GOB and various non-governmental (NGO) and donor agencies as well as the research community, program managers, planners and policy makers attended those seminars and shared their views. This final report provides detailed information about cost issues and throws light on programmatic and policy options.

The Advisory and the Technical Review Committees of the PDEU, made up of senior level professionals from Government and Non-government organizations, donor agencies and international organizations, universities and other leading research institutions, made significant contributions at different stages of the study. We convey our thanks to them.

We must express our heartfelt thanks to Mr. Safiur Rahman, Secretary of IMED, Ministry of Planning for his guidance and cooperation extended to us for carrying out the study. We also express our thanks to Mr. David L. Piet, Director of OPH, Mr. Sk. Ali Noor and others from USAID/Dhaka for their co-operation and assistance in conducting the study and disseminating the results.

We thank the professionals and other staff of PDEU, ACPR and FHI for their help in producing this useful report. The commendable performance of ACPR in collecting high quality data with appropriate supervision and quality control, and efficient procession of data deserves special appreciation.

We would like to pay tribute to Mr. G.M. Kamal, the Founder and Executive Director of ACPR who died on 23 December 1993, for his contribution to the development of the study design and the data collection instruments of the study.

On behalf of PDEU, IMED and the Ministry of Planning, I express my heartfelt thanks to all concerned, especially the program managers, field staff and clinic staff at different levels and all others who made contributions during the course of the study.

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The authors would like to thank the members of the Advisory Committee and the Technical Review Committee for their invaluable suggestions and comments on the design of the study.

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F

TABLE OF CONTENTS

Preface i

Advisory Committee and Technical Review Committee ii

Acknowledgments iv

List of Tables viii

List of Figures xi

I. Introduction 1

A. Country Setting 1

B. Demographic Situation 1

C. The Bangladesh Family Planning Program: History and Structure 2
1. History of the program 2
2. Current structure of the family planning program 3

D. Contraceptive Use and Method Mix 6

E. Study Rationale 7

F. Study Purpose and Objectives 8

G. Service Delivery vs. Total Costs 9

II. Methods 11

A. Sampling for Data Collection 11
1. GOB clinic facilities and employees 12
a. Sampling of THCs, FWCs, and SCs 12
b. Application of instruments at fixed facilities 12
2. GOB home service delivery program 13
a. Sampling of FWAs and FPIs 13
b. Application of instruments for FWAs and FPIs 14

B. Calculation of FP Visit Costs 14
1. Fieldworker data collection and methodology to determine visit costs 15
a. Labor costs 15
b. Costs of contraceptives 16
2. Clinic data collection and methodology to determine visit costs 17
a. Labor costs 17
b. Capital costs 19

G

c. Supply costs 20
d. Contraceptive costs 20
3. Sterilization data collection and methodology to determine costs 21
a. Labor costs 21
b. Capital costs 22
c. Costs of supplies and materials 22

C. Cost per CYP 23

D. Study Limitations 26

III. Results 27

A. Home Service Delivery Costs 27
1. Allocation of time 27
2. Types of visits 32
3. Salaries of providers and their allocation 36
4. Visits and Their Costs 38

B. Clinic Service Costs 39
1. Family planning costs at FWCs 39
a. Allocation of time 39
b. Salaries of providers and their allocation 43
c. Other service delivery costs 46
d. Visits and their costs 47
2. Family planning costs at SCs 49
a. Allocation of time 49
b. Salaries of providers and their allocation 51
c. Other service delivery costs 53
d. Visits and their costs 54
3. Family planning costs at THCs 55
a. Allocation of time 56
b. Salaries of providers and their allocation 57
c. Other service delivery costs 60
d. Visits and their costs 61

C. Program Costs for Permanent Methods 63
1. Allocation of time 63
2. Salaries of providers and their allocation 64
3. Other service delivery costs 67
4. Costs of sterilization 70

D. Costs of Contraception per Couple Year of Protection 70
1. Determining the schedule of FWA visits 71
2. Allocating the costs of visits to non-users 73
3. Calculating CYPs 76
4. Costs per CYP for methods provided by FWAs 77
5. Costs per CYP for methods initially provided at clinics 78

E. Cost Impact of Different Scenarios 80
1. Scenarios to determine the impact on costs of changes in unoccupied time 81
a. The home service delivery program 81
b. Clinic-based services 84

H

2. Scenarios showing the impact of an increase in continuation rates 84
3. Cost Impact Scenarios for the home service delivery program over the period 1994-2004 87

IV. Key Findings 89

V. Implications 92

Appendix 95

References 96

I

LIST OF TABLES

Table I.D.1 Trends in Current Use of Family Planning Methods 6

Table III.A.1 Reported and Adjusted Days per Month for FWA Home Visits and Overhead 28

Table III.A.2 Reported and Adjusted Days per Month for FPI Work 30

Table III.A.3 Minutes Spent by FPIs on Work and Non-Work Activities During Home Visit and Satellite Clinic Days 31

Table III.A.4 Distribution of Visits Made by FWAs by Contraceptive Use Status of Clients 33

Table III.A.5 Distribution of FWA Visits by Whether Contraceptives were Supplied and by Topics Discussed 33

Table III.A.6 Percent Distribution of FWA Visits to Contraceptive Users and Acceptors by Whether Contraceptives were Supplied and by Topics Discussed 34

Table III.A.7 Percent Distribution of Visits Among Non-Users or Users of Traditional Methods by Topics Discussed 35

Table III.A.8 Mean Contact and Visit Time (in minutes) for Visits Made by FWAs 35

Table III.A.9 Monthly Salaries and Benefits of FWAs Allocated to Home Visits and Overhead 36

Table III.A.10 Monthly Salaries and Benefits of FPIs Allocated to Work Time and Leave 37

Table III.A.11 Cost per Minute Allocated to Work and Non-Work Time by Type of Employee 37

Table III.A.12 Estimated Labor Cost by Type of Home Visit 38

Table III.B.1 Reported and Adjusted Work Time for Activities of the FWV and MA at the FWC 40

Table III.B.2 Allocation of Time Spent at the FWC by the FWV and MA 42

Table III.B.3 Allocation of Monthly Salaries for FWVs and MAs at the FWC 43

Table III.B.4 Cost per Month and Cost per Minute for Family Planning Work of FWV and MA at FWCs 44

Table III.B.5 Labor Cost per Minute for FP Work of Provider and Other Staff at the FWC 45

Table III.B.6 Costs of FWC Equipment and Building Allocated to Activities of FWV and MA 46

Table III.B.7 Costs of FWC Supplies and Small Equipment, Allocated to Visits of FWV by Type of Visit 47

Table III.B.8 Number of Visits, Mean Minutes and Costs for Various Visit Types at the FWC 48

Table III.B.9 Allocation of Time Spent at the SC by the FWV and the FWA 50

Table III.B.10 Allocation of Monthly Salaries for FWVs and FWAs at the SC 51

Table III.B.11 Cost per Month and Cost per Minute for Family Planning Work of FWV and FWA at the SC 52

Table III.B.12 Labor Cost for FP Work at the SC by Provider 53

Table III.B.13 Cost of SC Supplies and Small Equipment, Allocated to Visits 54

Table III.B.14 Number of Visits, Mean Minutes; and Costs for Various Visit Types at the SC 55

Table III.B.15 Allocation of Time Spent at the THC by the FWV 57

Table III.B.16 Allocation of Monthly Salaries for FWVs at the THC 58

Table III.B.17 Cost per Month and Cost per Minute for FP Work of FWV at the THC According to Various Activities 59

Table III.B.18 Labor Cost per Month and per Minute for FP Work at the THC for the FWV and Other Staff 60

Table III.B.19 Cost of THC Equipment, Furniture and Building, Allocated to Activities of FWV 60

Table III.B.20 Costs of THC Supplies and Small Equipment, Allocated to Visits of FWV by Type of Visit 61

Table III.B.21 Number of Visits, Mean Minutes, and Costs for Various Visit Types at the THC 62

Table III.C.1 Mean Minutes Spent in each Room by Type of Worker and by Type of Sterilization Procedure 64

Table III.C.2 Monthly Salary and Cost per Minute for Sterilization Service Providers 65

Table III.C.3 Labor Cost for Sterilization Procedures 65

Table III.C.4 Determination of Cost of Labor for Time Spent by Tubal Ligation Patients in the Ward 66

Table III.C.5 Total Labor Costs for Tubal Ligation and Vasectomy 66

Table III.C.6 Calculation of Percent of Operating Theatre Time Used for Sterilization Procedure 67

Table III.C.7 Calculation of Yearly Capital Cost for Operating Theatre 68

Table III.C.8 Cost of OT Room Allocated to Sterilization Performed 69

Table III.C.9 Costs of Supplies, Materials, and Reimbursement by Type of Sterilization 69

Table III.C.10 Labor, Capital, and Supply Costs by Type of Sterilization 70

Table III.D.1 Calculations to Determine Average Number of Visits per MWRA 71

Table III.D.2 Distribution of Fieldworker Visits to Family Planning Users as Reported in DHS 73

Table III.D.3 Distribution of Methods Discussed with FWAs Among Non-Users 75

Table III.D.4 Estimated Labor Costs for Motivation by Method Accepted 76

Table III.D.5 Information Used to Calculate CYPs 77

Table III.D.6 Labor Cost for One CYP of Oral Contraceptives Provided by FWAs; by Cost Category 77

Table III.D.7 Estimated Cost per CYP for Methods Provided by Fieldworkers 78

Table III.D.8 Estimated Cost per CYP for Three Methods Provided by FWVs at FWCs 79

Table III.D.9 Estimated Cost per CYP for IUDs Provided at Three Types of Rural Clinics 80

Table III.E.1 Impact of Increased Productivity on Cost per CYP for OCs Provided by FWAs 82

Table III.E.2 Scenarios for Increases in the Number of Days Worked 83

Table III.E.3 Scenarios for Increases in the Number of Hours Worked 83

Table III.E.4 Impact on Cost per CYP of 50% Increase in Time Spent Working for IUDs Provided at FWCs 84

Table III.E.5 Impact of Increased Continuation Rates on Cost per CYP for IUDs Provided at FWCs 85

Table III.E.6 Comparison of Cost per CYP for Tubal Ligation, Vasectomy; and IUD as a Reversible, Permanent Method Provided at THCs 86

Table III.E.7 Cost Projections for the Home Service Delivery Program for the Year 2004 88

Appendix Table 1 Data Collection Scheme for Government Fixed Facilities 95

Appendix Table 1 Data Collection Scheme for Government Outreach Services 95

L

LIST OF FIGURES

Figure I.C.1 Family Planning Service Delivery Staff at the District Level and Below 4

Figure II.A.1 Sampling Scheme for Home Service Delivery Program Workers and Fixed Facilities 12

Figure II.C.1 Calculating Costs per CYP for Clients Receiving OCs at Home 23

Figure II.C.2 Calculating Costs per CYP for Clients Receiving OCs at Clinics 24

Figure II.C.3 Calculating Costs per CYP for Clients Receiving IUDs at the FWC 25

Figure III.A.1 Time Spent Working by Location of Work for FWA 29

Figure III.A.2 Contact and Travel Time for Home Visit Days for FWAs 29

Figure III.D.1 Allocation of Costs of Visits to Non-Users/Traditional Method Users 74

Figure III.E.1 Measuring the Impact of Increases in Number of Days and Hours Worked 81

M

I. Introduction

I.A. Country Setting[1]

Bangladesh is a small country, almost entirely surrounded by the Northeastern corner of India. Nevertheless, it is the world's ninth most populous country with 119.7 million people. Eighty-eight percent of the population are Muslims, and Bangla is the language of over ninety-eight percent of the population. Bangladesh has a warm and humid climate. About two-thirds of the work force are employed in agriculture, although only one-third of the gross domestic product is agricultural. Key indicators point to the low socioeconomic level of the population: per capita income is only $210, and other indicators such as daily calorie intake place the country below that of other major south Asian countries. Administratively, the country is divided into six divisions, which in turn are divided into 64 districts, 486 thanas and 4405 unions. The country has 86,030 villages; twenty villages constitute a union with the population of a union ranging between 26,000 and 28,000.

I.B. Demographic Situation

The population of Bangladesh was only 29 million at the beginning of the century so it has quadrupled in the first ninety years of the century. The growth rate of the population peaked in the mid-1970s at around 2.5 percent, and had declined to 1.92 percent by 1994. This decline in the population growth rate may be explained by a change in the total fertility rate, which decreased from 6.3 in the mid-1970s to 4.2 in 1990.

While fertility has been declining, there is a built-in "population momentum," which will continue to generate population increases well into the future. Although there are various estimates of the number of married women in Bangladesh, it is apparent that in the early 1990s there were somewhere between 20 and 22 million married women, and by early in the next century this number will exceed 30 million (Mitra et al., 1994; Haider et al., 1995).

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1 The introduction draws heavily upon material presented in Haider et al., 1995.

I.C. The Bangladesh Family Planning Program: History and Structure

I.C.1. History of the program

In 1953, the government began to provide family planning on a limited scale in hospitals and clinics. Some experimental efforts were conducted in the early 1960s, and these set the stage for the major government field-based program which was initiated in the mid-1960s. In 1965, Bangladesh (then East Pakistan) launched a major initiative at the field level. At the village level, "dais" (traditional birth attendants) were recruited on a part-time basis to provide motivation-education and service delivery. They were supervised by male full-time workers. Because of the lack of physicians, female paramedics called Lady Family Planning Visitors (LFPVs) were recruited and trained to provide IUD insertions.

The current multi-based family planning program was initiated in November 1974 when a separate 'Population Control and Family Planning Division' was set up. Full-time female workers with a twelfth grade education, known as Family Welfare Assistants (FWAs) and males, with a similar education, known as Family Planning Assistants (FPAs) were hired.

In order to provide maternal-child health (MCH) care at an institutional setting in rural areas, Family Welfare Centers (FWCs) were constructed at the Union level. During 1978-80, seventy-nine FWCs were set up in pilot areas in five districts.

Beginning in 1980, there were major transformations that affected the provision of family planning services. At the thana level, new positions were created. At the union level, FWCs were established to provide MCH/FP services, with each staffed by a Medical Assistant (MA) and by a Family Welfare Visitor (FWV). Almost all unions now have one FWC. Clinical services were further expanded through the operations of satellite clinics (SCs), which provide varying combinations of FP and MCH services.

Initially in 1976, one FWA was recruited per ward for a total of 13,500 FWAs. Based on findings of research conducted by International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), the Directorate of Family Planning recruited another 10,000 FWAs in order to reduce the number of eligible couples (ELCOs) for which an FWA was responsible so that they could better cover their assigned areas. Specifically, the change was designed to reduce the number of ELCOs served by an FWA to about 800, and to reduce the time between visits from three to two months (Hasan and Koblinsky 1991). Currently an FWA is assigned a smaller

geographical area, officially known as a Unit, and on average is responsible for 600 to 800 couples.

I.C.2. Current structure of the family planning program

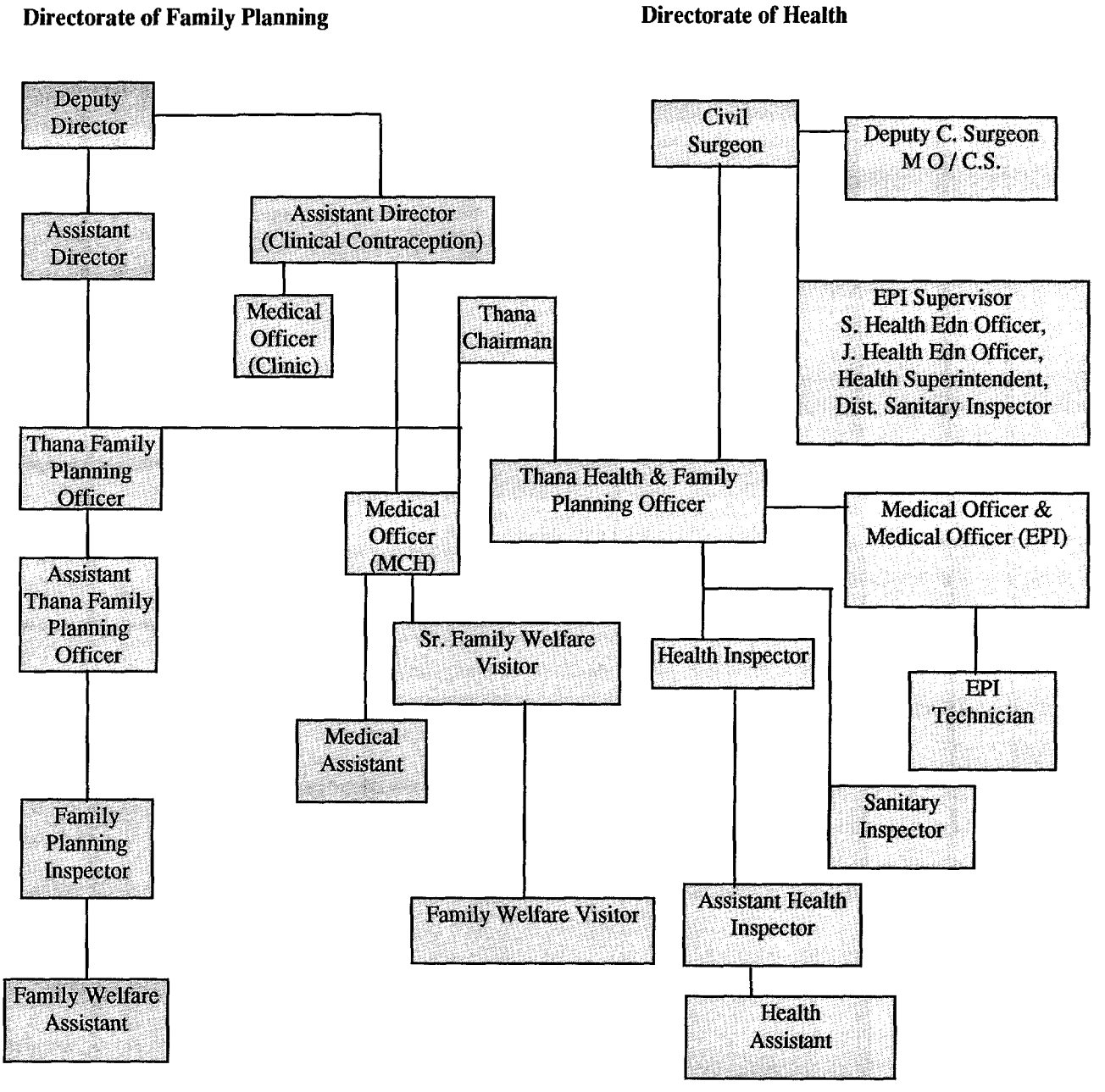
Today the program includes both fieldworkers who provide re-supply methods to women in their homes, and clinics which provide both re-supply and long-acting methods. This section describes the functions of the various workers who offer FP/MCH services to women in their homes and at clinics. In order to conceptualize the job functions of the workers, we first discuss the overall program structure. An organogram of the FP Service Delivery Staff at the District Level and below is shown in Figure I.C.1. The chart shows the different types of workers as well as the supervisory structure. The FWVs and MAs work at a large number of outlets that provide family planning services. At the Thana level, FWVs work at 349 MCH-FP units located in THCs. At the Union level, services are provided at 3000 FWCs which are staffed by both MAs and FWVs. At the Unit level, 30,000 SCs are organized each month to provide services closer to the homes of women. At the village and household level, FWAs contact women in their homes.

As the program has matured, the job of the FWA has evolved to include new responsibilities and these now include the following: (1) registration of all eligible couples (ELCOs) in her unit of the union and updating of these registers, (2) motivation for family planning and supply of pills and condoms through home visits, (3) participation in the Expanded Program of Immunization (EPI) program, (4) assistance at SCs, and (5) attendance at various meetings and submission of reports.

FWAs are expected to work 6 days per week. Although it has been suggested that 5-6 hours per day is a reasonable maximum for women working in rural areas, the number of expected work hours per day is not stipulated (Hasan and Koblinsky 1991).

Although the FWA is supposed to maintain a technical relationship with the FWV, she is supervised (see Figure I.C.1) by the family planning inspector (FPI). The FPI generally reports to the Thana Family Planning Officer (TFPO), although the diagram shows the FPI reporting to the Assistant Thana Family Planning Officer (ATFPO). The position of ATFPO is relatively new and it is still generally believed that FPIs are supervised by the TFPOs.

Figure I.C.1 Family Planning Service Delivery Staff at the District Level and Below



In addition to supervising FWAs, FPIs are responsible for duties such as preparing union schedules for EPI activities, organizing film shows, selecting sites and preparing schedules for SCs, etc. (MCH-FP Extension Project). Although not explicitly stated in their job description, the main job of the FPI is to supervise FWAs. Consequently, they are expected to spend 18 days per month in the field attending to supervisory duties.

The government provides clinical and re-supply methods through three types of clinic facilities in rural areas which vary in size and type of services offered. These include (a) Satellite Clinics (SCs), which are community buildings that serve as clinics; staff travel to them and make services available on only certain days of the week. They provide IUDs and re-supply methods as well as other health services. (b) Family Welfare Centers (FWCs) are fixed facilities which are open six days per week. Like SCs, the FWCs provide both health and family planning (FP) services as well as menstrual regulation (MR). Physicians may travel to these facilities at certain times in order to perform sterilizations. (c) Thana Health Complexes (THCs) provide the highest level of care in rural areas and are the only facilities to which a physician is assigned and in which there is an operating theatre so that, in theory, sterilization may be offered routinely.

The main provider of methods at all clinics (excluding sterilization) is the FWV. She has at least a secondary education and attends an 18-month training course. The FWV inserts IUDs, does follow-up visits and removes IUDs. She does the initial consultation for injectables, and like FWAs, she provides pills and condoms and re-supply of injectables. She is available to advise women who experience problems with methods. Finally, she also performs MRs. The FWV is assisted by the aya. In rural areas, FWVs are based at a FWC or at a THC for the majority of their work. On eight assigned days during the month, they organize SCs at eight different places in the union.

The government is an important provider of sterilizations; over 40 percent of sterilizations are carried out in THCs. All THCs have operating theatres and have a medical officer for family planning who has direct responsibility for carrying out sterilizations. The physician is assisted by other personnel at the THC, including the FWV and the aya, who also provide other family planning services.

I.D. Contraceptive Use and Method Mix

Bangladesh is an emerging success story in family planning. In 1975 (see Table I.D.1), when the first national survey was conducted, the contraceptive prevalence rate was less than 8 percent. By 1983, it was 19 percent, and in the subsequent ten years it has more than doubled and in 1993-94, it had reached 45 percent (Mitra et al. 1994).

Table I.D.1
Trends in Current Use of Family Planning Methods

Methods	1975 BFS	1983 CPS	1985 CPS	1989 CPS	1989 BFS	1991 CPS	1993-94 BDHS
Any Method	**7.7**	**19.1**	**25.3**	**31.4**	**30.8**	**39.9**	**44.6**
Any Modern Method	**5.0**	**13.8**	**18.4**	**24.4**	**23.2**	**31.2**	**36.2**
Pill	2.7	3.3	5.1	9.1	9.6	13.9	17.4
IUD	0.5	1.0	1.4	1.7	1.4	1.8	2.2
Injection	U	0.2	0.5	1.1	0.6	2.6	4.5
Vaginal Methods	0.0	0.3	0.2	0.2	0.1	U	U
Condom	0.7	1.5	1.8	1.9	1.8	2.5	3.0
Female Sterilization	0.6	6.2	7.9	9.0	8.5	9.1	8.1
Male Sterilization	0.5	1.2	1.5	1.5	1.2	1.2	1.1
Any Traditional Method	**2.7**	**5.4**	**6.9**	**7.0**	**7.6**	**8.7**	**8.4**
Periodic Abstinence	0.9	2.4	3.8	3.8	4.0	4.7	4.8
Withdrawal	0.5	1.3	0.9	1.2	1.8	2.0	2.5
Other Traditional Methods	1.3	1.8	2.2	2.0	1.8	2.0	1.1
Number of Women	U	7662	7822	9318	10907	9745	8980

U = Unknown (no information)
Source: 1975 BFS (Islam and Islam, 1993:43); 1983 CPS (Mitra and Kamal, 1985:159); 1985 CPS (Mitra, 1987:147); 1989 CPS (Mitra et al., 1990:96); 1989 BFS (Huq and Cleland, 1990:64); 1991 CPS (Mitra et al., 1993:53); 1993-94 BDHS (Mitra et al., 1994:49)

Use of modern contraceptive methods has grown steadily from 14 percent in 1983 to 31 percent in 1991 and to a high of 36 percent in 1993-94. Most of this growth, however, has been in re-supply methods. In 1983, re-supply methods made up 38 percent of modern method use while in 1993-94, this percentage had risen to 69 percent. In 1983, use of the pill was 3 percent compared to 17 percent in 1993-94 and use of injectables grew from 0.2 percent to 4.5 percent over the same time period. Use of long-acting and permanent methods changed little. Use of the IUD was 1.0 percent in 1983 and had increased to only 2.2 percent in 1993-94 while female sterilization grew from 6.2 percent to 8.1 percent over the same period of time.

Not only has there been a large increase in the use of re-supply methods, but, in addition, the source mix of these methods has changed. In 1989, 42 percent of users of pills and condoms got their method from a fieldworker. By 1993-94, over 65 percent of women were getting their pills or condoms from fieldworkers, either those who are employed by the government of Bangladesh (GOB) or by non-governmental organizations (NGOs). This change is partly due to the recruitment of 10,000 additional fieldworkers between 1987 and 1991 (Hussain et al., 1991). While the increase in employment of fieldworkers undoubtedly contributed to the increase in contraceptive use, it is also responsible, in part, for both the growing use of re-supply methods and the changing source of supply.

I.E. Study Rationale

While the family planning program has met with great success, there are concerns that expansion of the program to meet the needs of larger cohorts of women and to raise contraceptive use may lead to unacceptably high costs. Costs could increase dramatically in the home service delivery program. Approximately 23,500 FWAs and 4,500 FPIs are employed by the GOB, and the current yearly cost of the salaries and benefits paid to these workers is over $22 million. If the current ratios of ELCOs to fieldworkers and of fieldworkers to supervisors are maintained, then costs will increase rapidly. If, for example, the number of ELCOs increases by 40 percent over the period 1994-2004 (from 22 to 31 million) then costs of the home service delivery program will also increase by 40 percent to $31 million in the year 2004. An alternative scenario would be to maintain the same number of FWAs; while costs would not increase, the number of ELCOs for which each FWA was responsible would increase. Such a change could result in decreased visits to households and therefore make it difficult to maintain, let alone increase, the contraceptive prevalence rate. The prospect of either rapidly escalating costs or a return to high ratios of ELCOs to FWAs suggests the need to obtain information on the productivity and costs of the various functions carried out through the home service delivery program.

There are approximately 3000 FWCs and 350 MCH-FP units which offer services at THCs. On the assumption that one FWV and one aya are assigned to each of the FWCs while two FWVs and two ayas are assigned to the FP clinic at the THC, there would be 3700 FWVs and 3700 ayas working at FWCs, THCs and SCs. In addition, MAs provide services at FWCs while messenger, cleaning, and other services are provided by the Members of the Lower Subordinate Services (MLSSs) at both FWCs, and THCs. The annual cost of the salaries and benefits of all these workers is over $7 million. Because of the large amount of money spent on the salaries, it

is important to ensure that they and the facilities in which they work are used as productively as possible.

Another concern is that the success of the home service delivery program may have had negative consequences for the clinic program. The lowering of costs to clients through home visits may have discouraged use of clinics and of methods that are provided only through clinics. As a consequence of the shift in the method mix and growth of the home service delivery program, clinics and hospitals are a less important source of supply (Mitra et al. 1994). Thus, there is concern that long-acting methods such as IUDs are declining in use and that clinical facilities are increasingly less used for family planning. If the government implements its plan to increase the number of clinic and personnel providing services at these sites then the costs would also increase in the clinic based program.

The prospect of higher costs in both the home service delivery and clinic programs, combined with stagnating or declining donor funds, has turned attention to ways that family planning services can be provided more cost effectively. Information on the productivity of both the home visit and the clinic program is thus the focus of this report. However, the two service delivery systems in Bangladesh cannot be analyzed alone. While women may choose to get family planning services at a clinic facility, they will be visited at their homes regardless of their contraceptive method and source choice. Moreover, important functions of the FWA include motivation to use clinic methods and counseling for side effects, so that part of the costs of clinical methods includes costs associated with the home service delivery program. Consequently, any analysis of the costs of the clinical program must include some costs of the home service delivery program. Therefore, this report synthesizes findings on the costs and productivity of both the home service delivery and clinic program in order to suggest ways that resources could be used more efficiently.

I.F. Study Purpose and Objectives

The purpose of this study is to provide information to the government of Bangladesh to enable it to improve the efficiency with which family planning services are provided. In order to do this, the study has the following objectives:

1. To determine how fieldworkers and their supervisors spend their time and to determine the costs of the various types of visits produced by the home service delivery program;

2. To determine how clinic workers spend their time and to determine the costs of the various types of visits produced by the different types of clinics in rural areas;

3. To determine the time spent on various activities to provide sterilizations as well as the cost of a sterilization; and

4. To determine the cost per couple year of protection (CYP) for various methods provided by clinics and by the home service delivery program, taking into consideration interactions between the two programs.

I.G. Service Delivery vs. Total Costs

This study considers only the direct costs of service provision. Other costs such as training; information, education and communication; research and evaluation and over-all program administration are not included. If these other, or indirect, costs were added to those of direct service delivery, the costs of visits and of CYPs would be higher. Indirect costs are excluded as they may not increase as service delivery costs rise; even if they do increase, the relationship between service delivery and other costs may change as the number of contraceptive users rises. In any case, other research would be needed to explore the relationship between contraceptive use, and both direct and indirect costs.

Other studies have been conducted of the costs of family planning in Bangladesh. For example, one study examined the cost per birth prevented in the government program (Simmons et al. 1986) while a second study compared the cost, effect and cost-effectiveness of the government and the Family Planning Health Services Project (FPHSP) in Matlab (Simmons et al. 1991) and concluded that although the government program was less costly it was also less cost effective. While these studies considered both service delivery as well as indirect costs, they did not provide in-depth information on how resources are used to provide services, and therefore do not provide guidance on how to change resource use to increase efficiency.

The present study differs from these previous efforts in that it is conducted at the service delivery level and therefore focuses on the staff and facilities that provide services. Moreover, it focuses on rural areas, and it therefore obtains information for service provision at Thana Health Complexes (THCs) and lower level facilities. In comparison with "top down" approaches which use primarily aggregate-level data, our research is "bottom up" in that the emphasis is at a micro level or the site at which methods and services are provided. Thus, these results will be useful in

providing the government with information to make decisions to modify the ways in which contraceptive services are provided so as to best meet the challenge of increasing contraceptive use given limited resources.

II. Methods

Introduction

Data were collected in order to determine the costs of different types of visits, including MCH, health, and family planning. Within family planning, visit costs were calculated according to method and use status. A time-motion study was carried out to determine how workers who provided services in both the homes of women and in clinics spent their time, and this information formed the basis of the calculation of visit costs. Information on FP visit costs and continuation rates was then used to calculate costs per CYP. This section describes the selection of the sample (subsection A), the calculation of visit costs (subsection B), and finally, the calculation of costs per CYP (subsection C).

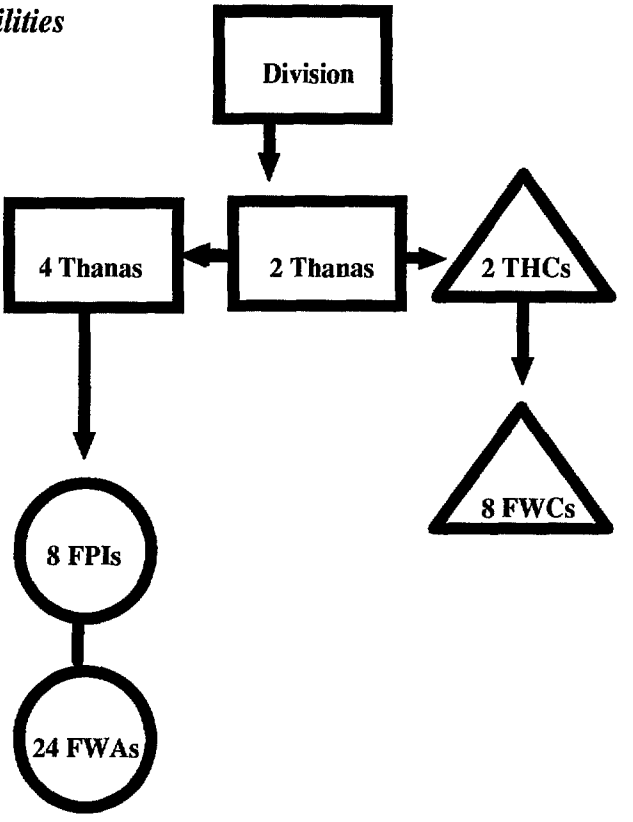
II.A. Sampling for Data Collection

This study obtained data at different types of government health facilities (e.g. THCs, FWCs, and SCs), and for fieldworkers and their supervisors, and was carried out over the period of October 1993 to February 1994. The government facilities and employees selected for this study were chosen randomly. The selection process was done in various stages, and depending on the needs of the study, the number of each type of facility and employee varied. First, to ensure good representation from all geographic locations in Bangladesh, each "old" division (Chittagong, Dhaka, Khulna, and Rajshahi) was represented in the study, with the same selection process in each division. The first half of this section describes the selection of GOB facilities, and the second half describes the selection of employees in the home service delivery program.

II.A.1. GOB clinic facilities and employees

II.A.1.a. Sampling of THCs, FWCs, and SCs

Figure II.A.1 Sampling Scheme for Home Service Delivery Program Workers and Fixed Facilities



The first stage of selection identified the thanas where the study would take place; this was done in the following manner (see Figure II.A.1, which shows the various sampling units for both the clinic and the home service delivery programs). Within each of the four divisions, a sampling frame consisting of eligible thanas was constructed. Only thanas with a THC and at least four constructed FWCs were eligible to be included in the sampling frame for each division. The thanas were ordered geographically and two were selected using a systematic sampling procedure (random selection of a starting thana and application of an appropriate sampling interval). Once the thanas were selected, the THC in each of those thanas was included in our study. The FWCs in the selected thanas were numbered and a random sample of four from each thana was chosen. The inclusion of SCs in this study was dependent on the selection of THCs and FWCs, and the work schedules of the FWVs.

As shown in the Appendix, the complete costs study has the following:
4 divisions x 2 thanas per division x 1 THC per thana = 8 THCs
4 divisions x 2 thanas per division x 4 FWCs per thana = 32 FWCs

II.A.1.b. Application of instruments at fixed facilities

Three instruments were used to obtain information on how providers spent their time. These included the following: (1) an abstract of the logbooks of the service providers, (2) observations conducted without the knowledge of these providers, and (3) observations conducted with the knowledge of providers.

An instrument for abstracting logbook information was applied to all FWVs and MAs in the study; this was expected to generate a total of 48 abstracts from FWVs (including those at both FWCs and THCs) and 32 abstracts from MAs.

At all 32 FWCs, secret observations of providers were conducted. Known observations were made of the different employees at 24 facilities, half of the 32 FWCs and eight THCs. At the THCs, two different FWVs were observed for six days, with an expected total of 96 days of observation. At 16 FWCs, FWVs were observed for six days each, for an expected total of 96 days of observation. Medical Assistants (MAs) at the 16 FWCs were also observed for a total of six days each for an expected total of 96 days of observation. See Appendix Table 1 which reports the expected and actual number of forms collected.

The FWVs stationed at both the THC and the FWC also worked at SCs during the 192 combined days of observation. FWVs are expected to spend two days per week at a SC so that we expected to have 128 days of observation at fixed facilities (half at the THC and the other half at the FWC) and 64 observation days at the SC. However, as shown in the Appendix, fewer days were spent at the SCs.

To ascertain the costs of sterilization, data were collected in the eight THCs. In each THC, the providers in the operating theatre were observed for six days for a total of 48 days of observation. During the same six day period in each THC, the sterilization clients were observed. This produced a total of 35 patients for analysis.

II.A.2. GOB home service delivery program

II.A.2.a. Sampling of FWAs and FPIs

For each of the eight thanas selected in the fixed-facility portion of the study, two neighboring thanas were chosen for data collection in the home service delivery portion of the study (see Figure II.A.1). By using the original eight thanas as an "anchor", the work was concentrated in one geographical location in each division, thereby reducing field costs. The selection of FWAs and FPIs in each of the sixteen neighboring thanas was done using a simple random sampling procedure.

II.A.2.b. Application of instruments for FWAs and FPIs

Three different data collection instruments were applied to FWAs as described above (logbook abstract, secret observation, and known observation); however, different subjects were selected such that no single FWA contributed data to more than one instrument. Also, the sampling for each instrument was spread out in the thana such that no two FWAs reported to the same supervisor; this reduced the probability of any participating FWAs sharing their experiences with each other. Two of these data collection instruments, secret and known observation, were used to obtain information on FPI activities. As with FWAs, no single FPI contributed data to more than one instrument.

The instrument for abstracting logbook information was applied to two FWAs in each thana for a total of 32 abstracts. Secret observations were conducted of two FWAs from each thana for a total of one day each, producing 32 days for analysis. In addition, secret observations were conducted for one FPI from each thana, for a total of 16 days. See Appendix Table 2 for detailed information on expected and actual numbers of forms collected.

Known observations were conducted among 4 FWAs in each thana for a total of 64 FWAs; 32 were observed for four days each while 32 were observed for two days each. The reason for this strategy was to provide data to help determine whether observer bias affected performance; however, these results are not described here. The complete study was expected to generate 192 days of known observation on the FWAs. The known observations for 16 different FPIs were conducted for two days per FPI, for a total of 32 days of observation.

II.B. Calculation of FP Visit Costs

The cost of a visit is the sum of the costs associated with the resources used to produce that visit; these include labor, contraceptives, supplies and capital. For each of these resources, the costs are equal to the amount of the resource used multiplied by its per unit cost. If more than one type of a particular resource is used, for example, different types of labor; then the amount used of each type of labor is multiplied by its per unit cost. All costs are then summed to determine the total cost per visit.

For each visit type, information was collected to determine the amount of the input used in an average visit as well as the unit cost of that input. Thus, this section discusses data collection for

both the determination of how much of each input is used in a visit, and the per unit cost of each input.

II.B.1. Fieldworker data collection and methodology to determine visit costs

II.B.1.a. Labor costs

Labor input into visits

Three types of data collection were used to determine how field workers and supervisors allocate their time. These included information on (1) activities that were reported to have been carried out in the previous month, (2) whether and how long FWAs and FPIs worked on specific days, and (3) types of work carried out and time spent in the field on other days. The three data collection instruments used to obtain this information are discussed below.

First, information was abstracted from the FWAs' logbooks to construct a monthly work pattern. The logbook provides information on the number of days spent in different activities including home visits, SCs, EPI camps, meetings and training, and authorized annual leave.[2] Because of monthly variations in the number of official holidays, a monthly average for days of leave was computed. Logbooks were not used to estimate the number of work days of FPIs. Instead, information from the FWA logbooks was used. In other words, it was assumed that FWAs and FPIs work the same number of days per month.

Second, the FWA logbook information was supplemented with secret observations of FWAs to determine the amount of unauthorized leave taken in a typical month in order to estimate the actual number of days worked. An observer viewed the FWA's house from a hidden location and noted whether or not she went into the field. The observer also noted whether or not she believed her presence had been noticed by the FWA. If the FWA did not leave her house by 2:00 or if she returned home before 2:00, the observer asked her why she did not work a full day. If she left the house and returned, the FWA was asked what kind of work she did that day. Secret observations of FPIs were carried out in a similar way.

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[2] In some cases, more than one activity was carried out on a given day so that the number of reported activities exceeded the number of days available for work; in such cases, the number of activities was scaled down to match the number of days available for work.

Third, an observational study was conducted in order to determine what types of activities were carried out during field work. With the knowledge of the FWA, trained observers accompanied the FWA from her home with her. Observers did not attempt to interview either FWAs or their clients. Information was obtained on the number of women contacted, the duration of contact time with clients during home visits, and whether contraceptives and/or information about FP or MCH was provided. In addition, information was obtained on travel time both to the field and from one household to another.

Similar observations were made of FPIs. Information was recorded on how much time the FPI spent during work days on activities such as field visits, administrative activities, and unoccupied time.

Per unit cost of labor

Information was obtained from the Government of Bangladesh on the compensation (salaries and benefits) paid to FWAs and FPIs. Benefits include housing, medical, transportation, and washing allowances. Average salaries and benefits were calculated for each category of worker. The information on salaries and benefits, together with information on work time, was used to calculate the cost of one minute of service delivery or work time.

Total labor costs of visits

The FWA labor cost for a home visit is the time spent by the FWA on the visit (including travel), multiplied by the cost of the FWA's time. The next step is to compute the labor costs of the FPI per FWA visit and add these costs to FWA labor costs, taking into consideration the average number of FWAs supervised by each FPI.

II.B.1.b. Costs of contraceptives

A list of prices paid by the GOB for different types of contraceptive products was also obtained. Prices for OCs, and IUDs are for USAID-supplied products. Condom prices are for those supplied by the European Community. The injectable price is the UNFPA price for Depo-Provera. Information on the amount of a method supplied (condoms and OCs) is obtained from the known observational study.

II.B.2. Clinic data collection and methodology to determine visit costs

A similar plan was used to determine the cost of services provided at clinics. The main differences was that for clinics we included the cost of the building, equipment and furniture. In addition, in some visits, supplies were used, and these costs are also included.

II.B.2.a. Labor costs

Labor time of providers

Logbook abstracts were obtained for FWVs and MAs at FWCs. The logbook provided information on how many days workers spent in activities such as work at the clinic at which they were based, work at SCs and EPI camps, meetings and training, and authorized annual leave.[3] As with FWAs, the average number of monthly holidays was used.

Secret observations were used to determine whether clinic staff reported to work so as to adjust the reported number of days worked. Observers arrived at the clinics early in the day and waited for the arrival of clinic staff using the pretext that they were there to pick up records. Thus, arrival times were noted without clinic staff knowing that there was any interest in obtaining such information.

For the observational or time-motion study, workers at each type of clinic were observed with their knowledge. Observers noted the types of activities carried out by clinic workers. These activities included the various types of FP and MCH visits and a single category for other health services. The components of visits were divided into client contact and preparation and clean-up. For each five minute period throughout the day, a check mark was entered for all activities carried out in that time. Any time during which multiple activities were performed was allocated equally among them.[4] The observers also obtained information on activities not

[3] The sum of days spent in various activities was adjusted to one month using a similar procedure to that used for fieldworkers (see third footnote).

[4] In some cases, there was a discrepancy between the time recorded in activities and the total time spent at the facility. In these cases we reduced or increased the time for each activity proportionately so that the cumulative total for all activities was equal to the total time spent at the clinic. However, cases in which there was more than a 10 minute discrepancy were dropped from the dataset before analysis. Eleven cases were dropped for this reason. For some cases there were clients but no time recorded, or there was time recorded but no clients, in specific visit categories. These visits were also removed from the dataset before analysis. Approximately 2% of the visits recorded (about 100) were removed from the dataset for this reason.

specifically connected with client visits, including administrative tasks, time spent on tea and bathroom breaks, and time spent unoccupied (idle time, time with friends/family and leave for personal reasons).

For FWVs working at the SCs, travel time was also recorded, but only for the trip from the FWC to the SC. Thus, we have no direct information on return travel time. Therefore the one-way travel time was doubled in order to estimate the total travel time presented in the tables.

Labor time of support staff

An aya and an MLSS provide support services at GOB clinics. However, no observations were made of these support personnel. For the purposes of cost allocations, the aya's time is apportioned to the same activities as that of the provider to whom she is assigned in the clinics. The time of the MLSS is assigned equally to the FWV and to the MA for FWC work, or to a larger staff if he works at a THC.

The aya generally accompanies the FWV to the SC, so her time at the SCs is apportioned to the activities of the FWV as it is at fixed clinics. In addition, an FWA also provides assistance at the SC. For the purpose of analysis, we assumed that a SC always has an FWA in attendance. This assumption is supported by a recent study in which FWVs reported that at 92 percent of SCs held, an FWA was present (Rashid et al., 1992). Some FWAs working at SCs were included in the fieldworker study, as described earlier; observations of FWAs, however, were not carried out at the same time nor at the same locations as the observations of FWVs at SCs. We made the assumption that the activities of FWAs who were observed at SCs were the same as the activities of FWAs who worked with FWVs at SCs but who were not observed.

Labor cost per unit of time

Information was obtained from the THCs on salaries and benefits of clinic workers. Benefits included housing, medical, transportation, and washing allowances. This information is used to calculate the cost per unit time of labor. Since staff are paid regardless of whether they are spending time with clients, carrying out administrative tasks or unoccupied, the labor cost of one minute of service delivery time includes not only the cost of a minute spent with clients, but also some part of the cost of time spent doing other things or unoccupied.

II.B.2.b. Capital costs

The total cost of capital is the quantity of different types of capital stock multiplied by the per unit cost of each type of capital. Costs are annualized using information on the expected life of each type of capital and the rate of discount. This cost is then allocated among the various clinic areas in which services are provided. Finally these costs are allocated to visits. Data collection and methods for calculating capital costs, and allocating these costs to different types of visits are described in this section.

Physical capital stock

Research staff visited eight FWCs and recorded the furniture and large equipment at each of these facilities. Similar information was obtained from two THCs. The contents of FWC, MCH, and IUD kits in the eight clinics were recorded. There was substantial variation in the contents of kits, with some clinics not having many of the indicated items. We decided to use the contents of a complete kit in determining costs; the assumption of a completed kit implies that some minimum standard of quality is being met as the small instruments in the kit should be available for use in all visits as needed.

The costs of different types of capital were obtained. For the various kits, and for furniture and equipment, we used the indicated price in government purchase orders. Also, the construction costs of new facilities of each type were also obtained from GOB purchase orders.

The cost of buildings was annualized using a useful life of 30 years and a five percent rate of discount. For furniture, equipment, large instruments, and the contents of FWC kits, we assumed a useful life of ten years and a five percent rate of discount. There are no building or equipment costs for SCs since community buildings are used.

The costs of IUD and of MCH kits was also annualized. The expected life of IUD and MCH kits is five years according to the GOB, but it seems likely that kits are typically used for longer than this. It was decided to calculate the costs of kits based on an expected life of ten years. Therefore the costs of IUD and MCH kits were allocated to the estimated number of visits occurring over a ten year period. For the IUD kits, costs were allocated only to IUD visits, while for MCH kits, costs were equally distributed across all visits.

Allocation of capital costs to clinic area/worker

The next step involves the allocation of capital to the various workers, and was carried out using information on the spatial distribution of their activities within each facility. Information was obtained on the purpose of each room in the FWC in order to allocate space across the various FWC activities. The costs of equipment and space designated for use by the FWV or the MA were allocated to each of these workers; shared equipment and space was split equally between them.

In the THC the family planning facilities represent only a small proportion of the building. Therefore, we prorated the building space to FWV work in the same proportion as the amount of space taken up by the FWVs in the THC facilities (about 10 percent). We included the share of the equipment and furniture in the rooms most likely to be used by the FWV.

Allocation of capital costs to specific family planning visits

The annualized capital costs were then allocated to visits on the assumption that capital was used in proportion to labor. Thus, the longer the visit, the more capital was assigned to it.

II.B.2.c. Supply costs

In addition to capital and equipment, various disposable supplies are also used in FP, MCH, and health visits at the clinics. The total supply costs are simply the summation of the number of units of each supply multiplied by its unit price. A list of prices was obtained from the major suppliers. Although an estimate was made by FWVs of the amount of each type of supply used per month per visit type, this information showed unexpected variability. Instead of using information reported by FWVs, we summed all supplies used and allocated equal amounts of supplies to all visits. FWVs also receive a monthly allowance to cover supply costs at the SC and we also allocated these supply costs equally across visits.

II.B.2.d. Contraceptive costs

The discussion on contraceptive costs included in the section on the home service delivery program also applies to the clinic-based program. In addition, the IUD price is for the Copper T 380.

II.B.3. Sterilization data collection and methodology to determine costs

The service delivery costs of both male and female sterilizations were calculated. Costs included the cost of all labor used to carry out the sterilization including the different types and amount of labor used in carrying out the procedure itself, preparation, clean-up and hospital recovery time, as well as the costs of supplies, equipment and space.

II.B.3.a. Labor costs

Labor time

In order to determine labor time associated with the performance of the sterilization, we conducted a time-motion study in which clients were followed from the time that they entered either the waiting room, an office, or some other preparatory room to the time that they entered the ward (with time noted as to when they expected to leave the ward), or the time that they left the hospital. Labor time of staff who provided services to the patient in the waiting room, in any offices, in the preparation room, in the operating theatre (OT) as well as in the recovery room was obtained. Also, an estimate was made of resource use for subsequent time spent in the hospital using information on the number of patients in the ward, the staff who were in the ward, and the average time that each patient spent in the ward. In addition, since some labor costs were associated with tasks carried out in the operating theatre when the patient was not present, interviews were conducted with these staff to determine the length of this additional time and its allocation across all surgeries.

Cost per unit of time

Information on salaries and benefits was obtained. However, unlike the time-motion studies that were carried out in rural clinics to determine the cost of visits associated with provision of temporary methods, information was not obtained on how providers spent their time when not engaged in functions associated with carrying out sterilizations. Estimates of the cost of provider time must therefore be adjusted to take into consideration the fact that some staff time is spent on non-service delivery activities including time spent unoccupied. Thus, information on salaries and benefits of sterilization providers was adjusted using the ratio of service delivery to time available for work for rural clinic workers. This ratio was used to "inflate" the cost of

time of sterilization providers so that estimates of costs for sterilization could be compared with those for other methods.

II.B.3.b. Capital costs

Physical capital stock

A list of equipment was obtained for each OT. Following the methodology used with clinics described above, we decided to use the costs associated with a fully equipped OT rather than an average for OTs with varying amounts of equipment. Thus, we assumed that a minimum standard of quality was being met, reflected in the availability of appropriate equipment.

Costs of Capital

We obtained information on the costs of the OT equipment from the GOB. We then annualized these costs assuming a useful life of ten years and a five percent discount rate. In addition, we included the OT's share of the cost of the THC building space, five percent, and annualized these costs using an expected life of 30 years and a five percent discount rate.

Cost of capital per sterilization performed

In order to determine the capital costs per sterilization performed, we conducted a study of the utilization of OTs. Information was obtained on the number, type and length of surgical procedures conducted. Thus, the percentage of time during which the OT was used for sterilization was calculated. This percentage was used to allocate capital costs to sterilization taking into consideration the number of days that the THC was open. These costs were then allocated across all sterilizations.

II.B.3.c. Costs of supplies and materials

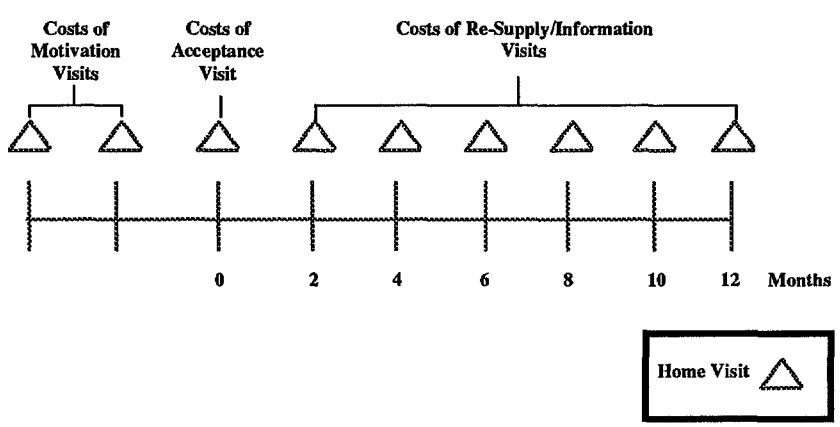
It is difficult to determine the average amount of supplies used in each sterilization. Instead, we obtained an estimate through interviews with staff members at organizations providing sterilization. In addition to medical supplies, recipients of a sterilization receive an article of clothing and a cash payment to compensate for travel time. Some medical personnel also receive a cash payment for each sterilization performed in addition to their regular salary. Information on these costs was obtained from the GOB.

II.C. Cost per CYP

While the cost per visit is an easy measure to compute and to understand, it is not a very useful way of evaluating the costs of different ways of providing family planning services or of different methods. Instead we examine the costs of services per couple year of protection (CYP). This measure takes into consideration the time period during which the individual uses the method and is protected against the risk of pregnancy. It incorporates information on the costs of visits that occur during the period of use as well as the cost of those visits which motivate a woman to accept family planning.

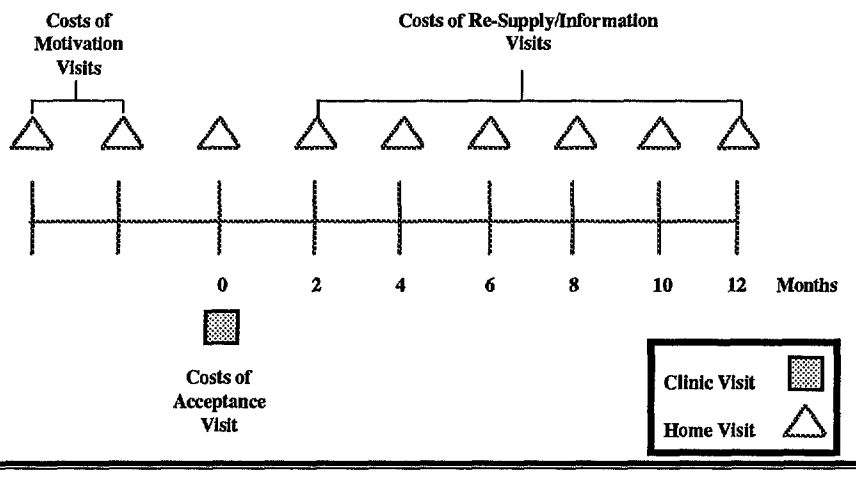
Costs per CYP are calculated for different methods and different delivery systems. Figure II.C.1 shows the various visits that occur for a woman who accepts OCs from a fieldworker and continues to use them for a year. Visit costs include those that motivate a woman to accept a method, the acceptance visit and the cost of re-supply/information visits made by the fieldworker. The cost for one year of protection is then the summation of the costs of these visits.

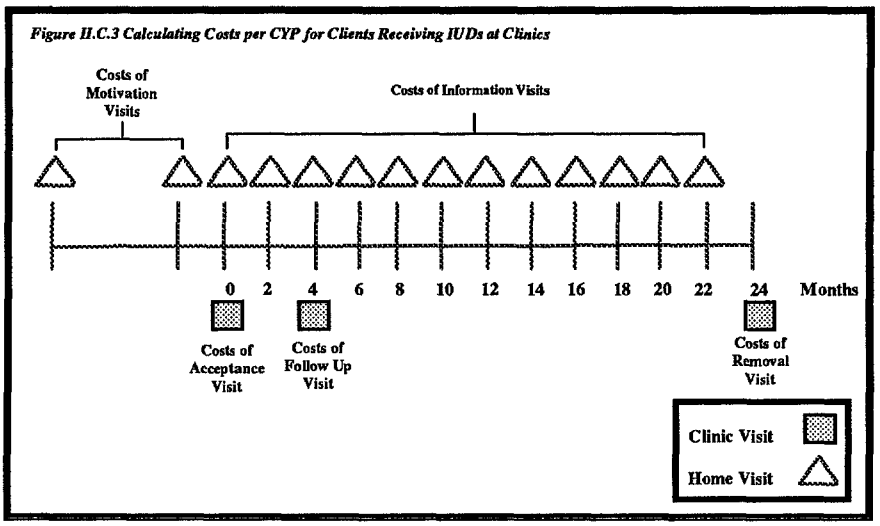
Figure II.C.1 Calculating Costs per CYP for Clients Receiving OCs at Home



Figures II.C.2 and 3 illustrate the point that costs per CYP for methods provided at clinics include the costs of fieldworker visits since a woman may choose to go to a clinic, whereas she cannot choose not to be visited by a fieldworker. Fieldworkers are supposed to visit all ELCOs every two months regardless of contraceptive use. Figure II.C.2 shows a situation in which a woman receives OCs from a clinic. Because she receives a method at a clinic, she does not necessarily have to return to the clinic for follow-up care and for supplies; some women may get their care and their supplies at home as is shown in this figure. Other women may make a first visit to a clinic for OCs and continue to return to the clinic for re-supply (case not shown). Figure II.C.3 shows a case in which the woman accepts a method at a clinic. In addition, she makes a follow-up visit to the clinic, and discontinues use at the clinic. For example, IUDs may be inserted, a woman may return for follow-up care and she may have her IUD removed at a clinic.

Figure II.C.2 Calculating Costs per CYP for Clients Receiving OCs at Clinics





Figures II.C.2 and 3 show that the total number of visits increases as the number of clinic visits increases; there is no trade-off between clinic and field visits. This is because it is assumed that the fieldworker follows the same schedule whether or not she provides the woman with OCs; therefore, the figures show the same number of visits made by the fieldworker no matter where the method is first accepted and whether the woman gets re-supply at a clinic.

In all these examples, the woman is motivated by the fieldworker to accept a method, and the cost of this visit must be included in visit costs whether or not the woman accepts the method from a clinic or from a fieldworker.

Under the current program structure, all eligible women are supposed to be visited by FWAs every two months, irrespective of their contraceptive use status or the supply source used by the clients. In practice the number of fieldworker visits varies by method and by place of provision. Information form the Demographic and Health Survey (DHS) is used to determine the pattern of fieldworker visits by method. In order to determine the number of months for which a woman is protected against the risk of pregnancy, information on continuation rates for temporary methods or on age at acceptance of sterilization is needed. For temporary methods, information on continuation rates is available from local sources. This information is used to determine the denominators for the cost per CYP calculations. In the case of sterilization, the number of CYPs is simply the difference between age 45 (assumed to be the end of the childbearing period) and

the age at sterilization. Information on age at sterilization is available from the most recent DHS.

II.D. Study Limitations

It is important to point out some of the limitations of the study. One limitation of the fieldworker study is that of the secret observations. Although the sample was randomly selected, it is relatively small. It is also important to note that some of the workers who were secretly observed realized that they were being observed and may have altered their behavior; such a change would have resulted in some workers leaving the house and going to work who would not otherwise have worked. Consequently, our results probably present a more optimistic picture of productivity and costs than is the norm. Similarly, in the observations in which workers were accompanied to the field, performance levels may have been higher as the worker wanted to impress the observer. However, as will be pointed out in this report, the findings for observations in which FWAs were accompanied to the field are similar to those found in other studies.

Some of these limitations are also relevant to the clinic program. In particular, the number of clinics and workers included in the study is not large; however, the methodology used in this study to estimate costs is new and it is not yet clear what would constitute a minimum number of clinics, providers, or provider observation days to include in such a study.

In addition to the limitations with respect to the home service delivery and the clinic programs which also apply to sterilization, another limitation of the analysis of sterilization costs is that a time motion study of providers was not carried out. Therefore no data were available on what providers did when they were not engaged in providing sterilizations. Consequently, it was necessary to use information on how other service providers spent time in order to make cost estimates. To the extent that service providers of sterilization spend different proportions of their time on administration and on leave (both authorized and unauthorized) than do other providers, then some unknown error has been introduced into the estimates.

III. Results

This chapter is divided into five sections, the first three of which calculate the costs of visits provided through (1) the home service delivery program, (2) the clinic-based program for temporary methods, and (3) the program for permanent methods. The final section of the chapter uses the information on visit costs to calculate the costs per couple year of protection for various combinations of methods and delivery channels.

III.A. Home Service Delivery Costs

This section calculates the costs of visits in the home service delivery program. First, information is presented on the allocation of time of the service delivery providers and their supervisors. The next section covers the types of visits made by providers. The third section covers the salaries and benefits of these workers and calculates the cost per unit time of providers and supervisors. The fourth section combines the findings in the initial two sections and shows the costs of different types of visits made in the home service delivery program.

III.A.1. Allocation of time

This sub-section shows how FWAs and FPIs allocate their time among various activities. Table III.A.1 provides information from the logbooks of the FWAs which show the reported number of days per month that they devote to various activities. As expected, FWAs report that their primary activity is home visits. Column 1 shows that of the 30.5 days in an average month, half are devoted to home visits (according to logbook reports). Of the approximately 24 working days (subtracting days for authorized leave), about 15 days or 64 percent are devoted to home visits. According to the government, FWAs are supposed to spend 14 days per month making home visits (Koblinsky et al., 1989).

Of the 32 GOB workers secretly observed, only 24 left their homes and worked.[5] The second column of Table III.A.1 adjusts the entries in the log book using the information from the secret

[5] The eight FWAs who did not leave their homes were questioned about the reasons that they did not work and their logbooks were examined. One FWA visited 40 households on the last day that she worked to avoid going to the field every day. Another FWA did not work because her child was ill; her husband, who was a FPI, did not work that day because he had gone fishing. Three FWAs said that they were sick but their logbooks indicated that they had not worked recently. Another FWA claimed that she was waiting for a family welfare visitor (FWV) to pick her up and take her to an IUD camp but her logbook indicated that she was supposed to be in the field on that

observations. Assuming that FWAs take unauthorized leave on 25 percent of work days, as they did when secretly observed, Column 2 shows that the number of leave days is now 12.5 including 6.2 days of unauthorized leave. To account for the 6.2 days of unauthorized leave, the reported number of days devoted to various work activities is reduced by 25 percent. This adjusted distribution shows that fieldworkers will spend four fewer days in the field making home visits than is indicated by the entries in the log book.

Table III.A.1
Reported and Adjusted Days per Month for FWA Home Visits and Overhead

Activity	Logbook Reports	Adjusted Using Secret Observations	Home Visits and Overhead
Home Visits	15.4	11.5	11.5
Satellite Clinics	1.2	0.9	---
EPI	3.1	2.3	---
Meetings/Reporting	4.5	3.3	2.6*
Authorized Leave*	6.3	6.3	4.9*
Unauthorized Leave	---	6.2	4.8*
Total	30.5	30.5	23.8

* Multiplier for "overhead":

$$\frac{\text{Home Visit Days}}{\text{Days for (Home Visits + Satellite Clinics + EPI)}} = 11.5/14.7 = 0.78$$

** Includes government holidays, annual and sick leave.

Since the focus of this section is on the home service delivery program for family planning, resources and the costs of those resources used to provide other services need to be excluded. Specifically, we exclude the labor time spent on other family planning activities (i.e., satellite clinic) and on other health activities. In addition, time spent on meetings and training may be considered to support all direct service delivery, including time spent in home visits, EPI and satellite clinics; such time is allocated between the home service delivery program and other service delivery channels in proportion to the time spent on these activities. Of time spent on direct service delivery, 78 percent of days are spent making home visits; therefore 78 percent of time spent in other activities (meetings and leave time) is allocated as overhead time to the home service delivery program. It should be noted that this time includes both productive and

day. Two other FWAs claimed that they were supposed to do EPI work but were unable to do so (no vaccine in one case, no one picked her up in the other); neither did other work in substitution.

unoccupied time and within the category of unoccupied time, includes both authorized and unauthorized leave. The last column of Table III.A.1 shows that in total 23.8 days are spent in support of home visits including 11.5 days in which home visits are made and 12.3 days in which FWAs attend meetings or take authorized or unauthorized leave.

On days that FWAs made home visits and were accompanied to the field by observers, the mean number of hours spent working or away from home was 3.75 hours as measured from the time the FWA departed house to the time she returned as shown in Figure III.A.1. Secret observations revealed that of the 24 FWAs who left their homes in order to work, the mean length of time spent working or away from home was 3 hours and 16 minutes. Since our calculations use a mean work time of 3.75 hours, we are assuming a best case scenario. On days that FWAs spent at satellite clinics only, the work day was about four hours. The section on clinic costs uses information on activities of FWAs on SC days.

Figure III.A.1 Time Spent Working by Location of Work for FWA

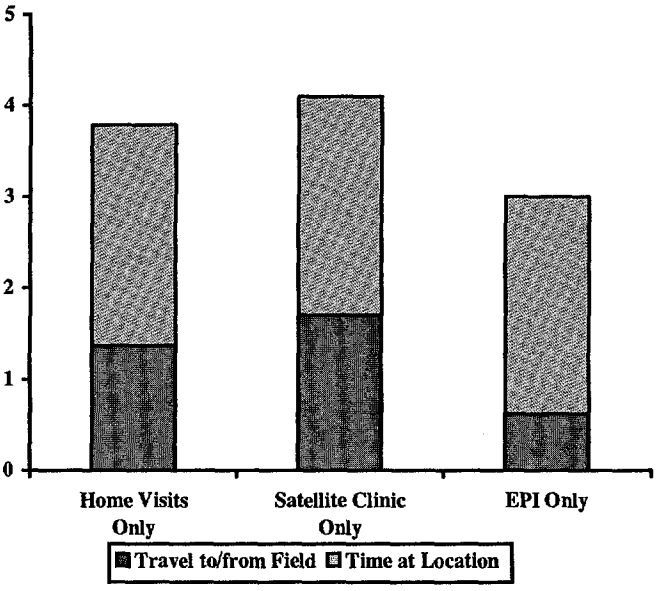
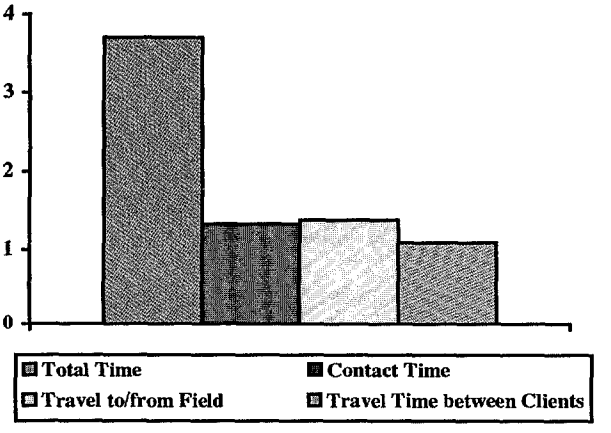


Figure III.A.2 shows the allocation of FWA time on days in which home visits are carried out. Time is divided among the following activities: time spent traveling to and from the field, time spent traveling from one household to the next, and time spent interacting with women. About twice as much time is spent traveling (both between households and to/from the field) as is spent actually meeting with women. On any day in which home visits are made, only about one hour and 15 minutes is spent meeting with women, and about 2½ hours is spent traveling.

Figure III.A.2 Contact and Travel Time for Home Visit Days for FWAs



In a study of six FWAs carried out over a two-month period in 1990 in a project area of the MCH-FP Extension Project, it was found that the average work day was 3.8 hours. In studies carried out in non-project areas, the work day was found to be less than 3 hours (Hasan and Koblinsky 1991). A previous study of nine FWAs (Koblinsky et al., 1989) found that they worked about 5 hours on home visit days and that 2.8 hours were available for client interactions. Although the official work day is 6 to 7½ hours, focus group discussions indicate that FWAs generally start for work after completing familial chores and return home by 2 p.m. (Koblinsky op. cit.). Our findings for both secret observations and accompanied visits to the field are therefore similar to work time recorded in other, smaller studies.

Since supervisors or FPIs are responsible for five outreach workers, this is an important cost associated with the service delivery output of FWAs. Tables III.A.2 and III.A.3 show how supervisor time is allocated to the work of the FWA. Column 1 of Table III.A.2 assumes that FPIs take the same number of days of authorized leave as do FWAs, and Column 2 shows the impact of adjusting work time using information from the secret observations as described below.

Table III.A.2
Reported and Adjusted Days per Month for FPI Work

Activity	Logbook Reports*	Adjusted Using Secret Observations	Home Visits and Overhead**
Work Days	24.2	10.9	8.5
Authorized Leave	6.3	6.3	4.9
Unauthorized Leave	---	13.3	10.4
Total	30.5	30.5	23.8

* Based on FWA logbook which reports 24.2 work days
** Home visit multiplier = 0.78 (see Table III.A.1)

Table III.A.3
Minutes Spent by FPIs on Work and Non-Work Activities During Home Visit and Satellite Clinic Days

Type of Activity	Home Visits (Mean Minutes Per Day)	Home Visits Percent	Satellite Clinic Visits (Mean Minutes Per Day)	Satellite Clinic Visits Percent
Work Activities with FWAs	76	26	40	14
Other Clinical Activities	0	0	38	13
Travel	138	47	146	49
Personal Overhead	16	5	8	2
Unoccupied	64	22	66	22
Total	294	100	299	100
Number of Days of Observation	19		12	

Of the sixteen supervisors observed secretly, nine supervisors reported that they worked while one remained home and reported that he did not work. Another six supervisors left their homes; when they were interviewed upon returning home, they reported that they had not worked. However, a review of the records of the nine supervisors who reported that they worked showed that while five definitely went to the field and worked, four others said that they went to the office to do some work. An ACPR staff member reviewed these latter four records and concluded that two of the four probably did work while the other two probably did not work. Therefore our best estimate is that seven out of sixteen supervisors (44 percent) actually worked. As shown in Column 2 of Table III.A.2, unauthorized leave accounts for 13.3 days per month (or 7/16 of 30.5 days) while work days account for only 11 days per month with not all these days spent in the field. It is important to note that the number of days allocated to unauthorized leave is higher for supervisors than for FWAs, reflecting the fact that a greater percent of supervisors than FWAs did not work on days when they were expected to work. Similar findings have been observed in other studies.[6]

[6] Research conducted since 1984 indicates that FPIs are often absent from duty. One study found that FPIs visited the field an average of ten days per month (Ashraf, 1992). Also, a survey of FWAs showed that only 51% reported that they had been visited by a supervisor in the last week (Rahman et al.,1991). Another study found that FPIs were frequently absent from their duties (Rahman and Koblinsky, 1986). The general conclusion of this research is that FPIs do not make good use of their time in performing their assigned functions, and the quality of their supervision is typically poor (MCH-FP Extension Project, ICDDR,B 1994).

The last column of Table III.A.2 adjusts for the time that the supervisor provides support to the fieldworker for home visits. On the assumption that the supervisor provides support to the fieldworker in proportion to how she spends her time, the number of supervisor days is multiplied by 0.78 (the time that the fieldworker spends on the home service delivery program as a proportion of her direct service delivery activities). This column shows that about 55 percent of the days available for work (total days minus authorized leave days) are actually spent on unauthorized leave (10.4÷18.9) and not on providing supervision to the FWAs.

Table III.A.3 shows the activities of supervisors on days that they were accompanied by observers. On both home visit and SC days, time spent outside the home is about 5 hours. Time spent outside the home as measured in the secret observation of FPIs was 4 hours, 22 minutes (data not shown). About one quarter of time is spent with FWAs on days that FPIs went to the FWAs' area but far less time was spent with them on days that supervisors went to SCs. Almost half of the FPIs' time is spent traveling, either to the field or from one FWA work site to another, or to the SC. About 20 percent of time is spent unoccupied. All FPI time is charged to home visits as it is not known whether FPIs were providing assistance to the FWA home service delivery program or to SC work during contacts made at the SC. The category "Other clinical activities" includes home visits for mobilization, and organizing meetings. This takes up about 13 percent of the FPIs' time on SC days.

III.A.2. Types of visits

In order to calculate costs per CYP, information is needed on the costs of visits that acceptors and users make to clinics and that fieldworkers make to their clients' homes. This section provides information on how FWAs allocate their time to different types of visits and the services provided during these visits; such information is useful in determining where management changes need to be made to improve program efficiency.

Table III.A.4 provides information on the distribution of FWA visits according to contraceptive use status of women. In our study, two-thirds of visits were made to acceptors or users of modern methods, and less than half were made to acceptors or users of re-supply methods (users of pills/condoms). However, information from the Demographic and Health Survey show that only 36 percent of women in union were using modern methods and 20 percent were using pills or condoms. One of the reasons for the discrepancy between the DHS and our study is that FWAs fail to include many non-users in their registers (Haaga et al., 1993). The results also

FWC activities including time actually spent at the FWC, the FWC's proportionate share of administrative work carried out outside the FWC and the FWC's proportionate share of non-work time.

Columns 4-6 of Table III.B.1 show the same information for the MA. As anticipated, the MA spends more time at the FWC than does the FWV. On average, he reported 19 days at the FWC to her 15. The number of unauthorized leave days taken by the MA as assessed by the secret observations is low, so that differences between Columns 4 and 5 are small. Of the 32 MAs that were to be secretly observed, one form was missing and ten MAs did not work; two were on authorized leave, one was on unauthorized leave and seven posts were vacant. Finally, Column 6 shows that the days allocated to the FWC, either directly or in support of FWC activities make up most of the month as the MA does most of his service provision at the FWC.

Information from known observations is presented in Table III.B.2 which shows how time is spent by both the FWV and by the MA at the FWC. On average, the FWV spends about 270 minutes at the FWC. She spends about 106 minutes delivering services, either time with the client or time preparing for or cleaning up after a visit. The 106 minutes is split about evenly for health, FP and MCH services. She spends over an hour on administrative tasks such as paperwork; it is not possible to determine if FWVs spent more time doing paperwork because they knew that they were being observed than they would have if they were not observed. Roughly ten minutes was spent on tea or bathroom breaks. The remaining time, or about 75 minutes, is spent unoccupied.

While it is unclear how many hours FWVs are expected to spend at FWCs, they clearly spend less than the expected number of hours. Therefore, we added additional time (about 60 minutes) to round out the work day to 5½ hours, or 330 minutes; the difference between time spent at the FWC and 330 minutes is categorized as time not spent but available to be spent at the FWC. Thus, over two hours are spent unoccupied or not at work, including 75 minutes at the clinic and almost 60 minutes not at the clinic.

The second column of Table III.B.2 shows the time devoted to FP visits and FP's proportionate share of other non-service delivery time, whether productive or not. Thus, a total of 119 minutes is attributed to FP with more of this time spent in support activities (including unoccupied time) than actually spent on delivering services.

Table III.B.2
Allocation of Time Spent at the FWC by the FWV and MA

Activity	FWV Mean Minutes Per Day		MA Mean Minutes Per Day	
	Total	FP and Support	Total	FP and Support
Family Planning	38.2	38.2	9.6	9.6
MCH	31.6	--	26.8	--
Health	36.5	--	56.3	--
Administration	77.5	27.8***	53.1	5.5****
Personal Overhead*	11.6	4.2***	17.0	1.8****
Unoccupied**	74.8	6.9***	104.4	10.9****
Subtotal	**270.2**	**97.1**	**267.2**	**27.8**
Not at FWC	**59.8**	**21.5*** **	**62.8**	**6.5**
Total	**330.0**	**118.6**	**330.0**	**34.3**

* Includes lunch/tea break/bathroom
** Includes idle time, leave for personal reasons, and time with friends/family.

*** Multiplier for FP share of non-service delivery time for FWV = $\frac{\text{FP}}{\text{FP + MCH + Health}} = \frac{38.2}{38.2 + 31.6 + 36.5} = \frac{38.2}{106.3} = 0.359$

**** Multiplier for FP share of non-service delivery time for MA = $\frac{\text{FP}}{\text{FP + MCH + Health}} = \frac{9.6}{9.6 + 26.8 + 56.3} = \frac{9.6}{92.7} = 0.104$

Columns 3 and 4 in Table III.B.2 show the same information for MAs. MAs spend about the same amount of time at the FWC as do FWVs, and they also spend about the same amount of time in actual service delivery. However, more of their time is spent delivering health services and less time is spent delivering FP services. Thus, as shown in Column 4, the mean minutes spent in providing FP is only 10, but the total time charged to FP is 34 minutes which includes 11 minutes of unoccupied time and six minutes not spent at the clinic.

III.B.1.b. Salaries of providers and their allocation

Table III.B.3 shows the allocation of the salaries and benefits of the FWV and the MA. Column 1 shows how the FWV's monthly salary and benefits of 2442 taka are allocated among her monthly activities using the information in Column 2 of Table III.B.1. Since her primary activity is to provide services at the FWC, the highest proportion of her salary is allocated to FWC work. Column 2 of Table III.B.3 shows her salary for FWC days only and allocates it using the distribution of activity days shown in Column 3 of Table III.B.1. Because so much of her time is spent in support activities outside the FWC (whether or not they are productive), a large part of her salary to support FWC work is for time not spent at the FWC. Column 3 of Table III.B.3, (using information from Table III.B.2) shows that only about 25 percent of her salary or 632 taka per month supports work of the FWV in FP at the FWC and about 356 taka (15 percent of her salary) supports FP services at the FWC although not all of this part of her salary supports direct service delivery as will be shown below.

Table III.B.3
Allocation of Monthly Salaries for FWVs and MAs at the FWC

	FWV			MA		
Activity	Salary for All Activities	Salary for FWC Only*	Salary for FWC, FP Only**	Salary for All Activities	Salary for FWC Only*	Salary for FWC, FP Only**
FWC	992.8	992.8	356.4	1974.1	1974.1	205.3
SC	248.2			- -		
Sterilization Camp	16.0			199.6		
Home Visits	104.1			55.5		
EPI	16.0			11.1		
Meetings, training	200.2	144.1	51.7	288.4	255.1	26.4
Authorized Leave	96.1	72.1	24.8	88.7	77.6	8.1
Government Holidays	464.4	336.3	120.0	643.3	565.6	58.9
Unauthorized Leave	304.3	216.2	78.7	122.0	110.9	11.2
Total	**2442.1**	**1761.5**	**631.7**	**3382.7**	**2979.5**	**309.9**

* Multiplier for FWC share of monthly salaries = 0.72 for FWV, 0.88 for MA
** Multiplier for FP share of FWC salary = 0.36 for FWV, 0.10 for MA

Columns 4-6 of Table III.B.3 show similar calculations for the MA. Since the MA spends little time providing FP, only 6 percent of his monthly salary is allocated to FP. Column 2 shows that like the FWV, only a small proportion of the salary of the MA supports FP.

Column 1 of Table III.B.4 provides a more detailed breakdown of the salary allocation of the FWV for time spent in family planning at the FWC. It shows that of the 356 taka that supports FP work, less than one-third of this amount actually covers direct FP service provision. Thus, of her total salary of 2442 taka, less than 5 percent is for actual provision of FP services at the FWC. All of the following reasons contribute to this weak position of FP: the FWV spends only about a third of her service delivery time on FP, she spends a considerable portion of her time in meetings and other administrative tasks or not working, she is idle at the FWC, she is at the FWC for less than 5½ hours, and she is on unauthorized leave.

Table III.B.4
Cost per Month and Cost per Minute for Family Planning Work of FWV and MA at FWCs

	Cost per Month		Cost per Minute*	
Activity	FWV	MA	FWV	MA
FWC Work				
Direct FP Services	114.8	57.5	0.24	0.33
Meeting, Training	83.5	32.9	0.18	0.19
Personal Overhead	12.6	10.8	0.03	0.06
Unoccupied	80.8	65.2	0.17	0.37
Not at FWC	64.6	38.9	0.14	0.22
Subtotal	**356.4**	**205.3**	**0.75**	**1.16**
Activities Outside FWC				
Meetings, Training	51.7	26.4	0.11	0.15
Authorized Leave	24.8	8.1	0.05	0.05
Holidays	120.0	58.9	0.25	0.33
Unauthorized leave	78.7	11.2	0.17	0.06
Subtotal	**275.2**	**104.6**	**0.58**	**0.59**
Grand Total	**631.7**	**309.9**	**1.34**	**1.75**

* Cost per month divided by monthly works minutes in providing FP services (= 12.4 days/month x 38.2 minutes/day = 474 minutes for FWV, 17.8 days/month x 9.6 minutes/day = 171 minutes for MA)

Column 2 of Table III.B.4 provides similar information for the MA. Because he spends so little time providing FP services, the proportion of his salary devoted to FP is low. Thus, only 58 taka or 2 percent of his salary supports the actual provision of FP services at the FWC.

Columns 3 and 4 of Table III.B.4 show the cost per minute of direct FP service delivery time for the FWV and the MA. The cost per minute of the FWV's time is 1.34 taka and the cost for the MA is 1.75 taka. This cost would be much lower if each of these workers were paid for only that time spent in direct service provision. But both workers are paid on a per month basis and,

as shown above, only a minority of their time is spent at the FWC actually providing services. If, for example, all time at the FWC were devoted to direct service provision, and FWVs spent 5½ hours at the FWC, the cost per minute for the FWV would be 0.82 taka (0.24 + 0.58). If unauthorized leave were eliminated, this cost would decline to 0.65 taka. Similarly, the cost per minute of the MA could be reduced to 0.92 taka if all FWC time was used in direct service provision, and to 0.86 if unauthorized leave were eliminated[7].

Table III.B.5 shows the labor cost per minute for services provided by the FWV and by the MA including the time of the aya and the MLSS. Since the aya assists the FWV, we allocated her salary to productive and nonproductive activities in the same proportions as that of the FWV. The salary of the MLSS is allocated equally between the FWV and the MA. However, since the FWV spends fewer days at the FWC than does the MA, and therefore her share of the costs are distributed over a small number of service delivery minutes, the cost per minute of the MLSS for the FWV is higher than for the MA.

Table III.B.5
Labor Cost per Minute for FP Work of Provider and Other Staff at the FWC

FWV and Other Staff				MA and Other Staff			
Personnel	Monthly Salary	FWC Salary	Cost per Minute	Personnel	Monthly Salary	FWC Salary	Cost per Minute
FWV	2442	1762	1.34	MA	3383	2983	1.75
Aya*	1915	1379	1.04	Aya	--	--	--
MLSS**	1045	1045	0.79	MLSS	1045	1045	0.61
Total	**5402**	**4186**	**3.17**	**Total**	**4428**	**4028**	**2.36**

* Proportion of Aya's salary devoted to FWC = 72% (assumes Aya allocates time in same proportion as FWV)
** Proportion of MLSS salary devoted to FWC = 100%, divided evenly between service to FWV and service to MA

[7] Note that the costs associated with unauthorized leave or with less than 5-1/2 hours spent at the FWC would not necessarily be eliminated even if both FWVs and MAs were to spend more days and hours at the FWC. Unless some of this additional work time went into direct service delivery, the total cost per minute would remain unchanged. The amount of direct service delivery time, however, is constrained by the number of clients seeking services at the clinic. Unless there were an increase in client demand, any additional hours spent at FWCs by FWVs and MAs would be spent idle.

III.B.1.c. Other service delivery costs

Table III.B.6 allocates the costs of equipment and of buildings. The building costs are allocated equally between the FWV and the MA. The cost per minute of building use is higher for the FWV than for the MA because she spends less time in the building, as noted above, and therefore her share of costs are distributed over a smaller number of service delivery minutes.

Table III.B.6
Costs of FWC Equipment and Building, Allocated to Activities of FWV and MA

Item		Total Cost	Cost per Year	Cost per Minute***
FWV				
	Furniture & Instruments	61,632	7,981*	0.50
	Building	522,885	34,015**	2.15
MA				
	Furniture & Instruments	61,209	7,927*	0.39
	Building	522,885	34,015**	1.66

* Total cost divided by annualization factor for 10 years at 5% discount
** Total cost divided by annualization factor for 30 years at 5% discount
*** Divided by minutes of productive work per year (12 months x 12.4 days/month x 106.3 minutes = 15,817 minutes for FWV, 12 months x 17.8 days/month x 95.5 minutes = 20,399 minutes for MA)

The total cost per minute including the cost of labor, furniture and instruments and the building is 2.65 for the FWV and 2.05 for the MA. It is interesting to note that the use of the building accounts for a considerable share of costs for both the FWV and the MA.

Table III.B.7 shows the distribution of supply and "small" equipment costs to the various visits. The most important addition is the cost of the IUD kit. This is because few women obtain IUDs so that costs are divided over a small number of visits.

Table III.B.7
Costs of FWC Supplies and Small Equipment, Allocated to Visits of FWV by Type of Visit

Item	Total Cost	Visits Observed	Visits per Relevant Time Period*	Period of Use	Cost per Visit	Allocated To:
General Supplies	596	1970	370	1 Month	1.61	All visits
MCH Kit	12,355	1970	44,415	10 Years	0.28	All visits
IUD Kit	4,298	87	1,961	10 Years	2.19	IUD visits

* Visits observed divided by days of observation (66) multiplied by days worked per month (12.4) multiplied by number of expected months of use.

III.B.1.d. Visits and their costs

Table III.B.8 shows the distribution of different types of visits provided by the FWV and the cost of these visits. Similar calculations are not shown for the MA because he provides so few family planning services. Of 1970 visits, or an average of about 30 per day over the 66 days of observation, over half were for general treatment and another quarter were for child health. Although FP visits account for less than one fifth of all visits, because they are on average longer than health visits, they constitute about a third of the total time spent with clients (Table III.B.2).

Table III.B.8
Number of Visits, Mean Minutes, and Costs for Various Visit Types at the FWC

Type of Visit	Visits	%	Mean Minutes	Costs For: Labor	Materials and Contraceptives	Equipment and Building	Total Cost
New Acceptors							
IUD	14	0.7	14.8	46.9	50.6	39.2	136.7
Pills	33	1.7	4.5	14.3	18.7	11.9	44.9
Injectables	42	2.1	8.1	25.6	31.9	21.4	78.8
Sterilization	0	0	--	--	--	--	--
Continuing User							
IUD Follow-up	67	3.4	7.8	24.9	4.1	20.8	49.7
IUD Removal	6	0.3	--	--	--	--	
Pills	51	2.6	4.7	14.8	18.7	12.4	45.9
Injectables	63	3.2	7.0	22.2	31.9	18.5	72.6
Condoms	13	0.7	3.0	9.5	26.6	7.9	44.0
Sterilization	53	2.7	4.1	13.0	1.9	10.8	25.7
MR							
Acceptor	10	0.5	20.1	63.7	1.9	53.3	118.9
Check-up	1	0.1	--	--	--	--	--
Rejection	2	0.1	--	--	--	--	--
Other FP	22	1.1	4.5	14.3	1.9	12.0	28.1
Prenatal Care	62	3.1	11.5	36.6	1.9	30.6	69.1
Postnatal Care	31	1.6	9.7	30.7	1.9	25.7	58.3
Children Under 5 Yrs.	432	21.9	2.8	9.0	1.9	7.5	18.4
General Treatment	1068	54.2	2.3	7.4	1.9	6.1	15.4

Of family planning visits, those made by continuing users represent the highest proportion of visits. Among acceptors, the highest proportion of visits were made by those obtaining injectables while among continuing users, the highest number were for IUD users.

The highest labor costs are for those visits that have the highest time input. Thus, Column 4 of Table III.B.8 shows that the labor costs for an IUD insertion are highest. Column 5 shows the costs of contraceptives and materials (assuming 2 cycles of OCs, 1 IUD, 1 injection, or 20 condoms per acceptor or re-supply method follow up visit); costs of visits in which contraceptives are provided increase substantially. For example, these costs are high for the IUD as they include the commodity cost of the IUD. Column 6 shows the costs of equipment and buildings; since they are allocated in proportion to the length of the visit, these costs are highest for the longest visits. The highest cost (Column 7) is for an IUD acceptance visit; both the

length of the visit (which affects labor and capital costs) and the contraceptive cost raise the total cost of this visit type.

III.B.2. Family planning costs at the SCs

This section provides information on the costs of visits provided at SCs. The main service provider is the FWV, and the aya travels with the FWV to the SC. They are met there by a FWA. Thus, on any day, it would be expected that there would be three persons working at the SC.

III.B.2.a. Allocation of time

We have seen in Table III.B.1 that the average FWV spends about four days per month at SCs, which is about half the number of recommended days. Similarly the average FWA spends about one day per month at the SC (Table III.A.1). This subsection presents the allocation of time among different activities of the providers at the SC.

Table III.B.9 shows how the FWV allocates her time on a typical day spent at the SC. Generally, she arrives at the FWC (or the THC) and then travels to the SC; at the end of the day, she returns to the FWC. On average, the FWV works about 318 minutes, which is somewhat higher than the average work time on a day spent at the FWC. Also, the division of time is significantly different. About 100 minutes is spent traveling to and from the SC. While at the SC, she spends close to two hours providing services, which is slightly more than the time spent in service provision at the FWC. At the SC, the FWV spends more time on administrative tasks but she has less unoccupied time. In order to allow comparisons with costs at the FWC, 11.8 minutes is added to round out the work day to 330 minutes.

Table III.B.9
Allocation of Time Spent at the SC by the FWV and the FWA

Activity	Mean Minutes per Day: FWV Total	FWV FP and Support	FWA Total	FWA FP and Support
Family Planning	43.1	43.1	35.2	35.2
MCH	38.6	--	23.4	
Health	37.4	--	4.7	
Travel	98.1	35.3***	90.3	49.7***
Administration	52.7	19.0***	37.5	20.6***
Personal Overhead*	10.1	3.6***	8.3	4.5***
Unoccupied**	38.3	13.8***	73.0	40.2
Subtotal	**318.2**	**114.8**	**272.3**	**150.1**
Not at SC	**11.8**	**4.3*** **	**57.7**	**31.7**
Total	**330.0**	**119.1**	**330.0**	**181.5**

* Includes lunch/tea break/bathroom.
** Includes idle time, leave for personal reasons, and time with friends/family.

*** Multiplier for FP share of non-service delivery time = $\frac{FP}{FP + MCH + Health}$ = 0.36 for FWV, 0.55 for FWA

Note: Of 25 FWV SC days observed, 8 were mixed SC/FWC or SC/THC days. FWC or THC time is added to SC time in same categories.

Table III.B.9, Column 2 shows the amount of time devoted to providing FP and to supporting services; the percent of time spent in FP and support accounts for more than a third of the work day.

Table III.B.9, Columns 3 and 4 show the results of the observation of FWAs at the SCs. On an average day spent at a SC, total work time is about 4 1/2 hours. About 90 minutes are spent traveling to and from the SC, which is about equal to the travel time of the FWV. Thus the FWA spends about three hours at the SC which is also similar to the amount of time that the FWV spends there. The FWA spends about one hour providing services with most of the time devoted to providing FP or MCH services. Because she spends a high proportion of service delivery time providing FP, the proportion of her time devoted to FP and support is high (close to 50 percent).

III.B.2.b. Salaries of providers and their allocation

Table III.B.10 shows the allocation of the monthly salary of the FWV and the FWA for all work and for FP work at the SC. About 440 taka of the FWV's monthly salary (Table III.B.10, Column 2) is allocated to SC work, and 158 taka (Column 3) to FP work at the SC.

Table III.B.10
Allocation of Monthly Salaries for FWVs and FWAs at the SC

	FWV			FWA		
Activity	Salary for All Activities	Salary for SC Only*	Salary for SC, FP Only **	Salary for All Activities	Salary for SC Only*	Salary for SC, FP Only **
FWC	992.8					
SC	248.2	248.2	89.3	78.7	78.7	44.1
Sterilization Camp	16.0					
Home Visits	104.1			1005.6		
EPI	16.0			201.1		
Administration Meetings, Training	200.2	36.0	13.0	288.6	17.6	9.9
Authorized leave***	560.5	100.8	36.3	550.9	33.6	18.8
Unauthorized Leave	304.3	54.7	19.7	542.1	33.1	18.5
Total	**2442.1**	**439.6**	**158.2**	**2667.0**	**162.7**	**91.1**

* Multiplier for SC share of monthly salaries = $\frac{\text{SC Days}}{\text{(SC+FWC+Ster. Camp+HV) Days}}$ = .18 for FWV, 0.06 for FWAs

** Multiplier for FP share of SC salary = 0.36 for FWVs, 0.55 for MAs
*** Includes government holidays, annual leave and sick leave

Table III.B.10, Columns 4-6 allocate the monthly salary of the FWA to SC work. Since she spends so little time at the SC, the portion of her salary allocated to the SC and to FP work at the SC is low (91 taka).

Table III.B.11, Column 1 shows how the monthly cost of the FWV at the SC is divided among various activities; only a small part of the cost is for direct service provision (32 taka or 20 percent of her SC salary). Since it is necessary to travel to the SC, an additional cost is assigned to the monthly time spent in traveling to and from the SC (26 taka or 16 percent of her SC salary).

Table III.B.11
Cost per Month and Cost per Minute for Family Planning Work of FWV and FWA at the SC

Activity	Cost Per Month		Cost per Minute	
	FWV	FWA	FWV	FWA
SC Work				
Family Planning	32.3	8.6	0.13	0.11
Administration	14.3	12.1	0.06	0.16
Personal Overhead	2.7	5.0	0.01	0.07
Unoccupied	10.4	1.1	0.04	0.01
Travel	26.5	9.7	0.11	0.13
Not at SC	3.2	7.7	0.01	0.10
Subtotal	**89.3**	**44.1**	**0.37**	**0.57**
Activities Outside the SC				
Meetings, Training	13.0	9.9	0.05	0.13
Authorized Leave*	36.3	18.8	0.15	0.24
Unauthorized Leave	19.7	18.5	0.08	0.24
Subtotal	**69.0**	**47.2**	**0.28**	**0.61**
Grand Total	**158.2**	**91.3**	**0.65**	**1.18**

* Includes annual and sick leave and government holidays.
** Cost per month divided by monthly minutes in providing FP services (=3.1 days/month x 78.4 minutes/day=243 minutes for FWV, 0.9 days/month x 84.9 minutes/day=76 minutes for FWA)

The second column of Table III.B.11 shows the monthly cost of FWA work at the SC, including the cost of time actually spent there, time spent traveling to and from the SC, and the SC's share of time spent on activities outside the SC, or non-work time spent away from the SC. About half of the monthly cost of 91 taka is actually for SC work including travel to and from the SC, while the other half is for supporting activities not carried out at the SC.

Column 3 of Table III.B.11 shows the cost per minute of service delivery time for the FWV. In order to be consistent with the treatment of travel in the analysis of FWA costs, travel time is treated as part of service delivery time in the denominator used to determine the cost per minute. Each cost item is therefore divided by a larger denominator (time spent in actually providing services and time spent traveling) for SC than for FWC work. The cost per minute is 0.65 taka, which is less than half the cost of a minute spent in service delivery at the FWC. In addition, the greater amount of time spent in service provision further reduces per minute costs of the FWV working at the SC.

The final column of Table III.B.11 shows the FWA's cost per minute of service delivery time. Monthly work minutes for service delivery are defined to include time actually spent providing services and travel time. The cost per minute of service delivery time is just over one taka with about 40 percent of the cost accounted for by actual time spent at the SC or in travel, and an additional 10 percent by available work time not spent at the SC. Only about 20 percent of the cost per minute covers actual service delivery or travel time.

Table III.B.12 shows the costs of labor for SC services. Labor time includes that of the FWV, the aya and the FWA. The total cost for the month is 947 taka; on a cost per minute basis, this comes to about 2.3 taka for one service delivery minute. This cost is lower than for visits made at the FWCs because on days that FWVs work at the SC, they spend more time either providing services or traveling.

Table III.B.12
Labor Cost for FP Work at the SC by Provider

Personnel	SC Cost per Month	Cost per Minute
FWV	439.6	0.65
Aya	344.7*	0.51**
FWA	162.7	1.18
Total	**946.9**	**2.34**

* Aya assumed to spend same proportion of time at the SC as does the FWV.
** Assumes aya works the same number of hours as does the FWV.

III.B.2.c. Other service delivery costs

Table III.B.13 shows the cost of the SC kit and the FWV's monthly allowance for supplies, as well as the allocation of these costs across visits. The monthly allowance adds 2.24 taka to the cost of each visit while the SC kit adds 0.62 taka.

Table III.B.13
Cost of SC Supplies and Small Equipment, Allocated to Visits

Item	Total Cost	Visits Observed	Visits per Relevant Time Period	Period of Use	Cost per Visit
Monthly Allowance	300	1,342	134	1 Month	2.24
SC Kit	10,000	1,342	16,104	10 Years	0.62

Note: 1342 visits were observed over a one month period. Thus, the SC kit, which is to be used for 10 years, would be used for 134 X 12 months X 10 years, or 16,104 visits.

III.B.2.d. Visits and their costs

Table III.B.14 shows the distribution of visits and the cost per visit. Over 31 days of data collection, there were 1342 visits to SCs or an average of 43 per day. As shown in Column 1, by far the highest proportion of FP visits were for women who received injectables and most of these visits were for new acceptors. IUD insertions and pill acceptors made up a small percentage of the total and few women returned to the SC for pills. Far fewer women received re-supply of injectables than received a first injection. Column 3 of Table III.B.14 shows the length of various types of visits excluding travel time while Column 4 includes travel time.[8] The final three columns present information on the costs of the visits. The most costly visits are those which are longest and in which contraceptives are provided. Because visits for IUD insertions were the longest, their cost was the highest. Visit costs are lower at the SC than at the FWC primarily because there are no capital costs at the SC.

8 The inclusion of travel time has no effect on the labor cost of visits at the SC, because it is included in the numerator (raises costs), but also in the denominator (reduces costs).

Table III.B.14
Number of Visits, Mean Minutes, and Costs for Various Visit Types at the SC

Type of Visit	Visits	%	Minutes Without Travel	Minutes With Travel*	Costs for: Labor	Materials and Contraceptives	Total Cost
New Acceptors							
IUD	15	1.1	10.9	13.2	63.0	49.4	112.4
Pills	20	1.5	3.9	6.1	29.3	19.7	48.9
Injectables	105	7.8	5.5	7.7	37.0	32.9	69.8
Sterilization	1	0.1	--	--	--	--	--
Continuing Users							
IUD Follow-up	24	1.8	5.0	7.3	34.7	2.9	37.6
IUD Removal	0	0.0	--	--	--	--	--
Pills	14	1.0	3.1	5.4	25.8	2.9	28.6
Injectables	45	3.4	5.2	7.4	35.5	32.9	68.4
Condoms	3	0.2	--	--	--	--	--
Sterilization	24	1.8	4.1	6.3	30.1	2.9	33.0
MR							
Acceptor	0	0.0	--	--	--	--	--
Check-up	0	0.0	--	--	--	--	--
Rejection	1	0.1	--	--	--	--	--
Other FP	40	3.0	3.1	5.4	25.7	2.9	28.6
Prenatal Care	79	5.9	5.8	8.0	38.4	2.9	41.2
Postnatal Care	20	1.5	3.2	5.4	26.1	2.9	28.9
Children Under 5 Yrs	318	23.7	2.7	5.0	23.8	2.9	26.7
General Treatment	633	47.2	2.3	4.6	21.9	2.9	24.8

* Travel time is weighted average of FWV and FWA mean travel time, allocated to all visits.
Note: Calculations assume that FWA allocates her time among visit types in same proportion as does FWV.

III.B.3. Family planning costs at THCs

This section covers the costs of family planning services provided by FWVs who work at THCs. The FWV is the main provider of non-surgical contraception in the THC. She is assisted in her work by an aya. General assistance in the THC is provided by an MLSS.

III.B.3.a. Allocation of time

This subsection shows how FWVs allocate their time at the THC among various activities. Because we did not conduct secret observations to verify work patterns and because we did not desegregate the logbooks for FWCs and THCs, we made the assumption that the monthly work patterns of FWVs at THCs were similar to those of FWVs working at FWCs. Thus, we assumed that the number of days worked and type of work conducted on any work day are as shown in Table III.B.1. In addition, we assumed that rates of absenteeism were similar to those of the FWVs at the FWC.

Table III.B.15 shows that the FWV spends an average of 5 1/3 hours at the THC. Not quite two hours are spent in direct service delivery including just over an hour spent in providing FP services. The FWV is unoccupied or absent from the THC for a little under two hours. Compared to the FWV at the FWC, she spends an additional ten minutes in direct service provision but twice as much time providing FP. Consequently, she spends less time providing both MCH and health services. The second column of Table III.B.15 shows the average number of minutes either spent on FP or allocated in support of FP work. Of the more than 3 1/2 hours allocated to FP, only 74 minutes is actually spent providing services. The remainder of the time is spent on administrative tasks, on personal overhead, or waiting for clients or not at the THC during work hours.

Table III.B.15
Allocation of Time Spent at the THC by the FWV

Activity	Mean Minutes per Day: Total	Mean Minutes per Day: FP and Support
Family Planning	74.2	74.2
MCH	17.8	--
Health	23.4	--
Administration	87.7	56.1***
Personal Overhead*	17.3	11.1***
Unoccupied**	99.2	64.5***
Subtotal	**319.6**	**205.9**
Not at THC	**10.4**	**6.6*** **
Total	**330.0**	**212.5**

* Includes lunch/tea break/bathroom.
** Includes idle time, leave for personal reasons, and time with friends/family.

*** Multiplier for FP share of Non-service delivery time = $\frac{FP}{FP + MCH + Health} = \frac{74.2}{74.2 + 17.8 + 23.4} = 0.64$

III.B.3.b. Salaries of providers and their allocation

Table III.B.16 allocates the salary of the FWV to various activities. Columns 1 and 2 are identical to Columns 1 and 2 of Table III.B.3 except that THC work is substituted for FWC work. The final column uses the "overhead" multiplier from Table III.B.15 to allocate the FWV's salary to FP. Because the FWV who works at the THC spends more time on FP than does the FWV at the FWC, more of her salary is allocated to FP.

Table III.B.16
Allocation of Monthly Salaries for FWVs at the THC

Activity	Salary for All Activities	Salary for THC Only*	Salary for THC, FP Only**
THC	992.8	992.8	635.4
SC	248.2	--	--
Sterilization Camp	16.0	--	--
Home Visit	104.1	--	--
EPI	16.0	--	--
Meetings, Training	200.2	144.1	92.2
Authorized Leave	96.1	72.1	46.1
Government Holidays	464.4	336.3	215.2
Unauthorized Leave	304.3	216.2	138.4
Total	**2442.1**	**1761.5**	**1127.3**

* Multiplier for THC share of "overhead"= 0.72 (see Table III.B.1)
** Multiplier for FP share of "overhead" = 0.64 (see Table III.B.15)

Table III.B.17 expands Table III.B.16 to include the various activities within the THC. The Table shows that of the 1127 taka in support of FP, about 20 percent covers payment for actual service delivery. Much of the time at the THC is spent unoccupied so that a high percentage of the FWV's compensation is for idle time.

Table III.B.17
Cost per Month and Cost per Minute for FP Work of FWV at the THC According to Various Activities

Activity	Cost per Month	Cost per Minute*
THC Work:		
Family Planning	221.9	0.24
Administration	167.7	0.18
Personal Overhead	33.2	0.04
Unoccupied	192.9	0.21
Not at THC	19.7	0.02
Subtotal	**635.4**	**0.69**
Activities Outside the THC:		
Meetings, Training	92.2	0.10
Authorized Leave	46.1	0.05
Holidays	215.2	0.23
Unauthorized Leave	138.4	0.15
Subtotal	**491.9**	**0.53**
Grand Total	**1127.3**	**1.23**

* Cost per month divided by monthly work minutes in providing FP services (12.4 days x 74.2 minutes = 920.1 minutes)

The second column of Table III.B.17 shows the cost per minute for service delivery work performed by the FWV. This cost is 1.23 taka; it includes the cost of time spent on service delivery as well as time spent on administrative work, unoccupied time at the THC, and activities outside the THC (includes meetings and leave). The cost of service delivery time would be reduced if the FWV had more clients and if she decreased the amount of unauthorized leave.

Table III.B.18 shows the labor cost per minute and includes the cost of time of the aya and the MLSS, in addition to that of the FWV. Since the task of the aya is to assist the FWV, all her time is charged to the tasks carried out by the FWV. The MLSS also provides general assistance to other staff at the THC, and only a small proportion of his time is charged to FP work. The last column shows that the cost of one minute of service delivery time is 2.33 taka. Labor costs per minute are somewhat lower than for the FWC, primarily because the cost of the MLSS is divided over a larger number of service providers. Also, the FWV who works at the THC spends more time providing services than does the FWV who works at the FWC, effectively reducing the cost per minute of her services at the THC.

Table III.B.18
Labor Cost per Month and per Minute for FP Work at the THC for the FWV and Other Staff

Personnel	THC Cost per Month	Cost per Minute
FWV	1758.2	1.23
Aya*	1378.8	0.96
MLSS**	202.6	0.14
Total	**3339.7**	**2.33**

* Assumes aya allocates time in same proportion as does FWV
** One-tenth of salary of MLSS allocated to activities of the FWV

III.B.3.c. Other service delivery costs

Table III.B.19 shows the costs of the building, furniture and equipment. Total capital costs per minute of service delivery time equal 1.28 taka.

Table III.B.19
Costs of THC Equipment, Furniture and Building, Allocated to Activities of FWV

Item	Cost Allocated to FWV*	Cost per Year	Cost per Minute****
Equipment and Furniture	36,460	4,722**	0.27
Building	266,532	17,339***	1.01
Total	**302,992**	**22,061**	**1.28**

* FWV is allocated approximately 10% of the cost of the THC building and 10% of the cost of furniture in shared rooms.
** Divided by annualization factor for 10 years useful life at 5% discount rate
*** Divided by annualization factor for 30 years useful life at 5% discount rate
**** Divided by minutes of productive work per day (12 months x 12.4 days per month x 115.4 minutes = 17,172 minutes)

Table III.B.20 shows costs per visit for supplies and small equipment. As with the FWC, only the allocated cost of the IUD kit has other than a minimal impact on costs.

Table III.B.20
Costs of THC Supplies and Small Equipment, Allocated to Visits of FWV by Type of Visit

Item	Total Cost	Visits Observed	Visits per Relevant Time Period	Period of Use	Cost per Visit	Allocated To
General Supplies	--	--	--	--	1.61*	All Visits
MCH Kit	12,355	1,376	28,048	10 Years	0.44	All Visits
IUD Kit	4,298	86	1,753	10 Years	2.45	IUD Visit

* From FWC estimates

III.B.3.d. Visits and their costs

Table III.B.21 provides information on the number, duration, and costs of different types of visits. Over a 73 day period, there were 1376 visits or an average of 19 per day. The average number of visits per day to the THC is therefore lower than to the FWC; however, FWVs at the THC spend more hours providing services than they do at the FWCs. This is because they provide some services that require a great deal of time. For example, they provide assistance for sterilizations and they perform MRs.

Table III.B.21
Number of Visits, Mean Minutes, and Costs for Various Visit Types at the THC

Type of Visit	Visits	%	Mean Minutes	Costs for: Labor	Materials and Contraceptives	Equipment and Building	Total Cost
New Acceptors							
IUD	24	1.7	12.3	28.7	51.0	17.0	96.8
Pills	65	4.7	4.4	10.3	18.9	6.1	35.2
Injectables	57	4.1	6.8	15.8	32.1	9.3	57.1
Sterilization	19	1.4	51.4	119.8	2.1	71.0	192.8
Continuing Users							
IUD Follow-up	52	3.8	7.9	18.5	4.5	11.0	34.0
IUD Removal	10	0.7	6.8	15.9	4.5	9.4	29.8
Pills	56	4.1	4.2	9.8	18.9	5.8	34.4
Injectables	97	7.0	6.2	14.5	32.1	8.6	55.1
Condoms	21	1.5	3.0	7.0	27.4	4.1	38.5
Sterilization	31	2.3	8.3	19.4	2.1	11.5	33.0
MR							
Acceptor	48	3.5	22.0	51.3	2.1	30.4	83.7
Check-up	5	0.4	--	--	--	--	--
Rejection	5	0.4	--	--	--	--	--
Other FP	7	0.5	--	--	--	--	--
Prenatal Care	87	6.3	9.6	22.3	2.1	13.2	37.6
Postnatal Care	25	1.8	6.6	15.3	2.1	9.1	26.4
Children Under 5 Yrs	182	13.2	2.7	6.2	2.1	3.7	11.9
General Treatment	585	42.5	4.7	11.0	2.1	6.5	19.5

Injectable follow-up visits comprised the largest proportion of FP visits. Pill acceptors made up the largest percentage of FP acceptor visits, followed by injectable acceptors. In addition, there were 19 women who were sterilized in the operating theatre and 48 cases of MR. The length of visits varies greatly (Column 3), with the longest visits occurring with sterilization procedures, followed by MR.

The labor cost of visits is proportional to the length of the visit as shown in Column 4 of Table III.B.21. Column 5 shows the cost of contraceptives, materials and supplies. In the case of visits in which contraceptives are provided, these costs are substantial. Column 6 shows the cost of equipment and buildings; since the costs are proportional to the length of visits, visits that are longer have higher capital costs. The highest total cost (Column 7) is for a sterilization visit, followed by an IUD insertion visit and an MR procedure.

III.C. Program Costs for Permanent Methods

This section provides information on the costs of both tubal ligation and vasectomy. The complete cost of a sterilization includes the costs of service delivery personnel, supplies and materials, and capital. This section provides information on the costs associated with each of these resources used to provide sterilizations.

III.C.1. Allocation of time

The labor cost of a sterilization is the summation of the product of the number of minutes spent on service delivery by each type of provider multiplied by the cost of a minute of that provider's time. Table III.C.1 provides information on the average amount of time spent by various staff on sterilizations. The table is further subdivided according to the room in which the services are provided. In the case of the cleaner, the average time spent in preparing and cleaning up the OT is divided by the average number of patients who received services in the OT per day. As anticipated, the average number of tubal ligations observed was far higher than the number of vasectomies, reflecting the higher prevalence of tubal ligations than of vasectomies. The amount of time spent per procedure by each service provider is higher for tubal ligations than for vasectomies. For example, the average time spent in the OT by the physician is 28.7 minutes in the case of a tubal ligation and 13.8 minutes for a vasectomy.

Table III.C.1
Mean Minutes Spent in each Room by Type of Worker and by Type of Sterilization Procedure

Type of Procedure	Waiting Room	Office	Prep Room	OT	Recovery Room	Total
			Location			
Tubal Ligation (n=35)						
Doctor	0.1	2.6	0.4	28.7	0.3	32.0
FWV	1.4	14.4	3.8	34.0	0.6	54.1
Aya	0.1	2.2	3.9	38.5	2.0	46.7
Cleaner (aya or MLSS)	- -	- -	- -	30.3	- -	30.3
Vasectomy (n=6)						
Doctor	2.7	5.3	2.0	13.8	0.0	23.8
FWV	4.7	18.0	0.8	6.0	0.0	29.5
Aya	2.7	6.5	4.0	10.7	0.0	23.8
Cleaner (aya or MLSS)	- -	- -	- -	5.2	- -	5.2

Number of observation days = 14

III.C.2. Salaries of providers and their allocation

Table III.C.2 provides information on the monthly salaries and the cost per minute of time for each provider. Since the observational study focused on the patient and not on the provider, the number of minutes of unallocated time for each worker is unknown. Information is therefore missing on the proportion of time available for work that is actually spent on service provision. Since estimates of the cost of visits for other contraceptive methods included unallocated time, in order to make the estimates for sterilization visits comparable to those for other method-related visits, an estimate of the proportion of work to total available time is necessary. We use information on the percentage of available time spent in service delivery by FWVs to adjust the cost per minute estimates. As expected, the cost per minute for service delivery time for a sterilization is highest for the physician.

Table III.C.2
Monthly Salary and Cost per Minute for Sterilization Service Providers

Personnel	Monthly Salary	Cost per Minute *
Doctor	5,203	2.86
FWV	2,442	1.34
FWA	2,667	1.46
Aya	1,915	1.05
Cleaner	1,992	1.09

* Monthly salary divided by ratio of FWV monthly salary to FWV cost per minute.

Table III.C.3 uses information from Table III.C.1 and Table III.C.2 to calculate the labor cost for sterilization procedures. The labor cost for a tubal ligation procedure is 246 taka, while the labor cost of a vasectomy procedure is 138 taka.

Table III.C.3
Labor Cost for Sterilization Procedures

Personnel	Time Input	Cost per Minute	Total Labor Cost
Tubal Ligation			
Doctor	32.0	2.86	91.5
FWV	54.1	1.34	72.5
Aya	46.7	1.05	49.1
Cleaner (aya or MLSS)	30.3	1.09	33.1
Total	--	--	**246.2**
Vasectomy			
Doctor	23.8	2.86	68.1
FWV	29.5	1.34	39.5
Aya	23.8	1.05	25.0
Cleaner (aya or MLSS)	5.2	1.09	5.7
Total	--	--	**138.3**

Table III.C.4 provides information on staff time spent with tubal ligation patients in the ward during the period after surgery and the costs associated with that time. (Only one vasectomy patient stayed in the ward; therefore, these costs are omitted for vasectomy patients as they are likely to be low and because we have limited information.) In order to ascertain the average time that personnel spent with patients, we determined the amount of time that each patient spent

on the ward recovering from a sterilization, the number of other patients that were assigned to the ward and the title and estimated number of hours that each staff person intended to spend on the ward. With this information, we determined the average number of contact minutes that each provider spent on the ward with an average sterilization patient. Each of the service providers spends about 30 minutes in the ward, with about 4-5 minutes spent with each patient. Table III.C.4 also provides information on the cost of time spent by providers working in the ward. The last column shows the costs associated with the stay of the average patient on the ward. Aggregating over all service providers, the cost associated with the ward is about 30 taka.

Table III.C.4
Determination of Cost of Labor for Time Spent by Tubal Ligation Patients in the Ward

Personnel	Mean Minutes per Day Working in Ward	Mean Minutes per Patient per Procedure*	Cost per Minute**	Total Labor Cost
Doctor	33.0	4.7	2.86	13.4
Nurse	24.0	3.4	1.34	4.6
FWV	33.0	4.7	1.34	6.3
FWA	36.2	5.2	1.46	7.5
Total				31.9

Number of patients observed = 30
* Time spent by provider in ward divided by number of patients multiplied by percent of day patient spends in ward.
** Salary for nurse assumed to be equal to FWV salary.

Finally, Table III.C.5 shows the total labor costs for both tubal ligation and for vasectomy. The labor cost is about twice as high for tubal ligation; the lower cost for vasectomy reflects both the lower cost of the procedure and the fact that vasectomy patients do not stay in the ward following surgery.

Table III.C.5
Total Labor Costs for Tubal Ligation and Vasectomy

Labor Input	Tubal Ligation	Vasectomy
Procedure	246.3	138.3
Ward	31.9	--*
Total	**278.2**	**138.3**

* Vasectomy patients normally do not stay in the Ward following surgery.

III.C.3. Other service delivery costs

Tables III.C.6, 7 and 8 provide information on the allocation of capital costs associated with the OT. The allocation of the costs of the OT (both building and equipment costs) depends on what percentage of OT time is used for sterilization clients. The first two columns of Table III.C.6 show the mean number of procedures performed on all days and on days during which the OT is open. The OT was open during only 21 days of observation and closed on the other 27 days. As a consequence, the mean number of procedures performed is much higher on days in which some procedures are performed than on all available days. The mean number of procedures performed on open days is 5.8 and of this total, 1.7 are for tubal ligations and only 0.1 is for vasectomy. The mean minutes per procedure (Column 3) was highest for delivery but the infrequency of deliveries observed in the OT reflects their rarity and suggests that this was a difficult delivery. The mean number of minutes spent in the OT by a tubal ligation patient was far longer (33 minutes) than for a vasectomy patient (12 minutes). These numbers are similar to those recorded in Table III.C.1 although the focus of Table III.C.1 is on the provider and the focus of Table III.C.6 is on the patient. The fourth column simply multiplies Columns 2 and 3 and shows the total minutes the OT is used for different types of procedures. Finally, Column 6 shows the percent of total OT time used for different types of procedures. In total, 42 percent of OT time is used for sterilizations (mostly for tubal ligation) and consequently 42 percent of the cost of the OT will be allocated to sterilization.

Table III.C.6
Calculation of Percent of Operating Theatre Time Used for Sterilization Procedure

Type of Procedure	Total Number of Procedures	Mean Procedures on All Days	Mean Procedures on Open Days	Mean Minutes per Procedure	Total Minutes per Open Day	Percent of OT Time
Tubal Ligation	36	0.75	1.71	32.7	56.0	42.4
Vasectomy	3	0.06	0.14	12.0	1.7	1.3
MR	6	0.13	0.29	16.0	4.6	3.5
D&C	3	0.06	0.14	30.7	4.3	3.3
Delivery	1	0.02	0.05	355.0	17.9	13.4
General Surgery	25	0.52	1.19	26.0	30.9	23.4
Stitch Removal	6	0.12	0.29	10.3	3.0	2.3
PV Exam	18	0.37	0.86	5.8	5.0	3.8
Other	23	0.48	1.10	7.9	8.7	6.6
Total	**121**	**2.51**	**5.77**		**132.0**	**100.0**
Number of Days of Observation		48	21			

Table III.C.7 shows the cost of using the OT including both the cost of the building itself as well as the cost of the equipment in the OT. We assumed that the OT was well equipped and therefore used the list of equipment that was found in the best equipped OT rather than an average for all OTs. In addition, the table shows the annualized cost of both the building and the equipment.

Table III.C.7
Calculation of Yearly Capital Cost for Operating Theatre

Item	Total Capital Costs Allocated to OT	Cost per Year
Equipment*	37,173	4,814***
Building**	140,165	9,118****
Total	**177,338**	**13,932**

* Equipment cost based on best-equipped OT
** OT room for sterilization is allocated 5% of construction cost of THC
*** Divided by annualization factor for 10 years useful life at 5% discount rate
**** Divided by annualization factor for 30 years useful life at 5% discount rate

Table III.C.8 uses the information in Tables III.C.6 and 7 to determine the capital cost for both male and female sterilization. The share of capital costs attributed to the aggregate number of procedures is first calculated (Column 1 multiplied by the last column of Table III.C.6) and then this figure is divided by the number of procedures so that Column 3 shows the capital costs for an average procedure. Since the OT time for tubal ligation is longer than for a vasectomy, the capital costs for tubal ligation are higher than for vasectomy.

Table III.C.8
Cost of OT Room Allocated to Sterilization Performed

Item	Cost per Year	Sterilization Share*	Cost per Procedure**
Tubal Ligation			
Equipment	4,814	2,041	9.45
Building	9,118	3,886	17.90
Total	**13,932**	**5,907**	**27.35**
Vasectomy			
Equipment	4,814	63	3.62
Building	9,118	119	6.86
Total	**13,932**	**181**	**10.48**

* Cost per year times proportion of OT time for procedure (see Table III.C.6)
** Cost per year divided by number of procedures per year:
for tubal ligation, 24 days per month x 12 months per year x 0.75 procedures per day = 216
for vasectomy, 24 days per month x 12 months per year x 0.06 procedures per day = 17.3

Table III.C.9 shows the supply costs for both tubal ligation and vasectomy, which are higher for tubal ligation.

Table III.C.9
Costs of Supplies, Materials, and Reimbursement by Type of Sterilization

Item	Cost per Procedure
Tubal Ligation	
Medicine, Supplies	150
Reimbursement	175
Saree	150
Total	**475**
Vasectomy	
Medicine, Supplies	75
Reimbursement	175
Lungi	87
Total	**337**

III.C.4. Costs of sterilization

Finally, Table III.C.10 shows the service delivery costs for each of the sterilization procedures. The cost of a vasectomy is about two-thirds the cost of a tubal ligation. Costs for both procedures are dominated by labor and supply costs with capital costs playing a minor role. Moreover, supply costs, which are the highest component of costs, are mainly driven by non-procedure related costs, that is, reimbursement and clothing items provided to the patient.

Table III.C.10
Labor, Capital, and Supply Costs by Type of Sterilization

Item	Cost per Procedure
Tubal Ligation	
Labor	278.2
Capital	27.4
Supplies	475.0
Total	**780.6**
Vasectomy	
Labor	138.3
Capital	10.5
Supplies	337.0
Total	**485.8**

III.D. Costs of Contraception per Couple Year of Protection

Introduction

This section uses the information on visit costs presented in the three previous sections to determine the costs per CYP for different methods provided by different delivery systems. In the numerator of this ratio are the costs of all visits to motivate a woman to accept and to continue to use a particular method. The first section of this chapter shows how we determine the number of follow-up visits by method and the second section how we determine the number of motivation visits, both of which are necessary to determine the total number of visits in the numerator of the cost per CYP ratio. The third section provides information on continuation rates and age at sterilization, which are used to determine the denominator of the cost per CYP ratios.

The remaining sections show cost per CYP by method and delivery system. Scenarios are presented to show how improvements in efficiency of both the home visit and the clinic

programs can reduce costs per CYP. The impact of an increase in continuation rates on cost per CYP is also explored. In addition, the costs of alternative ways of providing permanent protection are calculated. Finally, scenarios are presented to show future cost savings that would result from improvements in efficiency.

III.D.1. Determining the schedule of FWA visits

Although FWAs are expected to visit households every two months, there may not be sufficient time for them to make this many visits. Table III.D.1 shows the calculations to determine the average number of visits made per married women of reproductive age (MWRA) or ELCO Column 1 assumes that all women are visited every two months, Column 2 shows what would happen if FWAs visited women on days on which they report that they carried out home visits, and Column 3 shows calculations using results from the secret observations and assumes that FWAs work fewer than 15.4 days making home visits.

Table III.D.1
Calculations to Determine Average Number of Visits per MWRA

	Visitation Patterns Calculated Assuming:		
	Home visits made assuming 6 visits per MWRA	Home visits made using reported work time	Home visits made using actual work time
Estimated number of MWRAs reached by FWAs*	16.9 million	16.9 million	16.9 million
Estimated number of home visits per year	101 million	81 million	60 million
Estimated number of home visits per FWA per year	4409	3511	2600
Reported number of days on which home visits made:			
Per month	15.4	15.4	11.4
Per Year	185	185	137
Average number of home visits per day	24	19	19
Visits per Woman per Year	6	4.8	3.6

* Estimated Number of MWRAs in 1993/94 is 22 million. We assume that there are 23,000 government FWs and 7000 NGO FWs, so that government programs should reach 77%, or 16.9 million MWRAs.

In 1993/94, there were approximately 22 million MWRA in Bangladesh. There are about 30,000 outreach workers; 23,000 are GOB FWAs and 7000 are NGO workers. Therefore, since FWAs account for 77 percent of population field workers, they can cover 77 percent, or 17

million of the MWRAs. (This assumes that the GOB and NGO workers provide the same coverage.) If all 17 million women were visited six times per year, then 101 million visits would be made. With 23,000 FWAs, this would require 4409 visits per FWA per year. If FWAs spent 15.4 days in the field each month, as recorded in their logbooks, they would need to make an average of about 24 visits per day in order to see each client every two months. More realistically, and as shown by this study they make about 19 visits per day (Column 2), which would suggest that they visit each MWRA about 4.8 times per year or about once every 2-1/2 months. However, even though they report 15.4 field visit days per month, in practice, they spend about 11.4 days in the field (Column 3) so that they would not be expected to visit all their clients once every 2-1/2 months. Therefore, instead of visiting each client an average of 4.8 times per year (consistent with a 2-1/2 month visitation period), they likely visit the average client about 3.6 times per year or once every 3.5 months.[9]

Of course, some clients are visited more often than others. We use information on the visit patterns shown in the recent DHS to allocate the "average" of 3.55 visits per acceptor across the various method groups (Table III.D.2). The second column of Table III.D.2 shows the visit distribution of women by method, as reported in the DHS by field workers, including those from NGOs, according to the method used by the client. On average, women in the DHS who reported a fieldworker visit in the previous six months reported an average of 3.0 visits. However, only 43 percent of women reported such a visit. For all women, this gives an average of 2.5 visits per year (fourth column) which is lower than our number. In the fifth column of the table we inflate the DHS estimates so that they average out to 3.6, since our calculations indicate that this is the average number of times each MWRA is visited each year. These visit averages by method are used below to calculate the cost of follow-up visits associated with each method group. Because follow-up visits are far more likely for pill than for sterilization users, the cost associated with follow-up will be higher for pills than for sterilization.

9 Although a FWA gets paid for making 4.8 visits per year, our "cost per minute" estimates take into consideration the fact that she does not work on all scheduled days and therefore are consistent with a downward adjustment to a schedule of 3.6 visits per year.

Table III.D.2
Distribution of Fieldworker Visits to Family Planning Users as Reported in DHS

Contraceptive Use Status	Number of Women	Mean Visits in Last Six Months for Women Visited	Number of Women Visited	Mean Visits per Year for All Women	Adjusted Visits per Year*
Pill	1560	3.2	1218	5.0	7.0
IUD	196	3.5	100	3.6	5.0
Injection	404	3.5	281	4.9	6.7
Condom	269	3.4	158	4.0	5.6
Female Sterilization	724	3.4	154	1.4	2.0
Male Sterilization	98	4.5	21	1.9	2.8
Other/Nonuser	5728	3.1	1882	2.0	2.9
Total	**8979**	**3.0**	**3814**	**2.5**	**3.6**

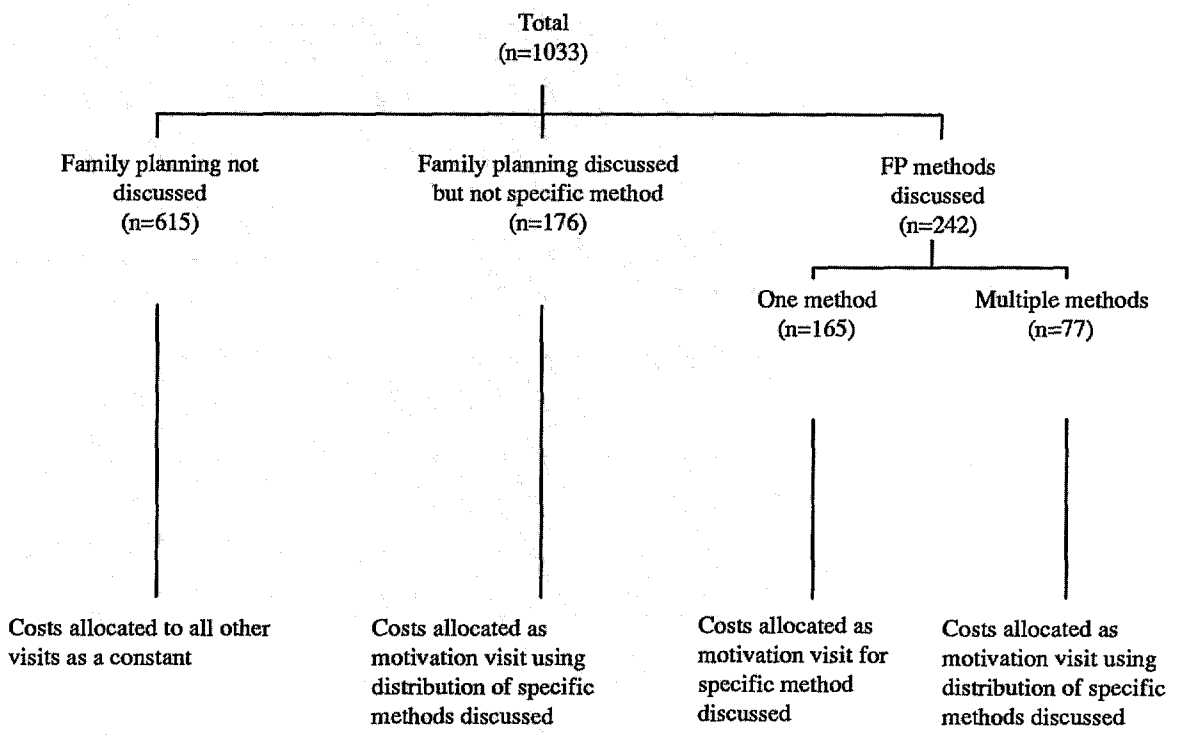
*Mean visits for each category calculated from DHS (Mitra et al., 1994).

III.D.2. Allocating the costs of visits to non-users

Some home visits cannot be easily assigned to a method as they cannot be classified as acceptance, information or re-supply. We classify these visits as either motivational, in which case they are assigned to a method group, or as "not motivational," in which case the costs of these visits are distributed across other visits.

Visits in which fieldworkers discuss family planning with non-users can be considered motivational visits. About 60 percent of FWA visits with non-users, however, involve non-users who are given no discussion of family planning (Figure III.D.1). The result of distributing these visit costs across all visits with users is to increase by about three taka the cost of every type of family planning visit. For instance, the labor cost for visits to new acceptors increases from 16.0 to 19.0 taka. For other types of visits the adjustment increases the visit cost by about 25 percent.

Figure III.D.1 Allocation of Costs of Visits to Non Users/Traditional Method Users



There are no published estimates of the number of motivation visits required to encourage a woman to accept family planning. Therefore we estimated the required number using information on the number of visits to non-users in which family planning is discussed, all of which are treated as motivation visits. The costs of these visits were distributed according to the

frequency of the discussion of specific methods as shown in Table III.D.3. Fieldworkers were most likely to talk about pills, although they provided information on other methods. These visits were then allocated using the ratio of visits in which a method was discussed to the number of acceptors of that method.

Table III.D.3
Distribution of Methods Discussed with FWAs Among Non-Users

Method	Percent
OCs	35.7
Condoms	7.3
Injectables	15.2
IUDs	20.0
Tubal ligation	20.0
Other Clinical	1.8
Total	100.0
Number of Visits	165

Table III.D.4 shows the costs of motivation for acceptors of various methods. These costs are dependent on the length of visits in which different methods were discussed as well as the ratio of motivation to acceptance visits. The higher the ratio of motivation to acceptance visits and the longer the average discussion time, the higher are the costs of motivation. In addition, the costs of OC motivation are lower because it is assumed that some acceptors obtain their methods from a source other than the FWA; therefore, the costs of motivation are also divided among acceptors receiving methods at other sources. The ratio of motivation to acceptance visits for OCs is used to calculate motivation costs for acceptors of clinical methods.

Table III.D.4
Estimated Labor Costs for Motivation by Method Accepted

Method Accepted	Specific Method Discussion	General FP/Multiple Method Discussion*	Subtotal	Pro-Rated cost of Non-User Visits**	Total
Pills	5.1	9.6	14.7	1.2	15.8
Condom	5.0	6.7	11.7	0.9	12.6
Injectable	9.2	6.5	15.7	1.9	17.6
IUD	8.6	8.7	17.2	1.9	19.2
Sterilization	10.4	8.7	19.0	1.9	21.0

* Allocated according to method distribution.
** Includes only visits in which family planning not discussed.
Note: These costs do not reflect the time spent in a single visit, but include all time allocated to motivate use of a particular method. For allocations of OC and condom motivation costs, the actual ratio of motivation to acceptance visits was used (allowing for some visit time to motivate for acceptance of methods from other sources). For IUDs, injectables and sterilization, the ratio of motivation to acceptance visits for FWA-supplied OC acceptors is used.

III.D.3. Calculating CYPs

The continuation rate for the various methods is provided in Table III.D.5. For temporary methods, the continuation rate is highest for the IUD and lowest for condoms. Information on continuation rates is used to determine CYPs, which are shown in Column 2. The median continuation rate is calculated using a life-table methodology, under the assumption that the cumulative risk of discontinuation is constant from one year to the next. As expected, the lowest number of CYPs is credited to condoms as this method has the lowest continuation rate.

Table III.D.5
Information Used to Calculate CYPs

Method	Continuation Rate*	Median Years of Protection**	Data Source for Continuation Rate
OCs	50.6%	1	Larson, et al. 1991
Condoms	29.3%	1/2	Hossain, et al. 1994
Injectables	58.9%	1-1/4	Hossain, et al. 1994
IUDs	65.0%	2	Hossain, et al. 1994
Sterilization	Not Applicable	18	Mitra et al. 1994

* Calculated at the end of 12 months of use.
** Calculated using a life-table methodology, assuming constant risk of discontinuation from month to month. The monthly survivorship function s is estimated from the 1-year continuation rate r using $s=r^{1/12}$; the median number of months of continuation x is solved for in the equation $s^x=0.5$. Median years of protection is rounded to the nearest quarter-year for ease of calculation.

III.D.4. Costs per CYP for methods provided by FWAs

The labor costs for pills for one CYP provided by fieldworkers is presented in Table III.D.6. This includes seven home visits as shown in Table III.D.2. The costs are the summation of fieldworker and supervisor costs. For the 12 month period, the total labor cost is 122 taka. The table also shows how costs are divided among salary payments attributable to home visits, supporting administrative work, authorized and unauthorized leave. The costs of the time spent to make all of the visits makes up about 37 percent of the total cost. Administrative costs make up about 16 percent of the total cost or about one-third of work time. The remaining costs make up about 47 percent of the total. If FWAs and FPIs were not paid for the days on which they took unauthorized leave, the labor cost would be 90 taka or about 25 percent less than calculated.

Table III.D.6
Labor Cost for One CYP of Oral Contraceptives Provided by FWAs, by Cost Category

Personnel	Home Visits	Administration	Authorized Leave	Unauthorized Leave	Total
Fieldworker Costs	45.3	10.4	20.0	20.0	96.2
Supervisor Costs	---	9.3	4.6	10.4	25.5
Total	**45.7**	**19.7**	**24.6**	**30.4**	**121.7**

Table III.D.7 shows the total service delivery costs per CYP for pills and condoms when they are supplied by fieldworkers. The average number of visits made per year to condom users is 5.6 as shown in Table III.D.2. Labor costs per CYP are higher for condoms than for pills because the costs of motivation and acceptance visits for condoms are spread over a much shorter time period than for pills. In addition, the inclusion of commodity costs also raises costs per CYP for condoms. Considering both labor and commodity costs, the cost per CYP for condoms is about 22 percent higher than that of pills.

Table III.D.7
Estimated Cost per CYP for Methods Provided by Fieldworkers

Input	OCs	Condoms
FWA	96.2	103.9
FPI	25.5	27.5
Total Labor Cost	**121.9**	**131.4**
Contraceptives	**110.0**	**152.5**
Total	**231.9**	**283.9**

Contraceptive cost assumes 13.6 cycles of OCs or 121 condoms per CYP.

III.D.5. Costs per CYP for methods initially provided at clinics

Methods that are initially provided at a clinic will be referred to as "clinic-provided methods." It does not necessarily mean that follow-up care is also provided at a clinic; some women may get their care at home. All three types of clinics provide care to new and continuing clients. For example, in all clinics, IUDs may be inserted, a woman may return for follow-up care and she may have her IUD removed. Similarly, a woman may make her first visit for injectables or pills at a clinic and she can continue to return to the clinic for re-supply. However, acceptors may choose not to return to a clinic for re-supply or for a follow-up visit; only in the case of discontinuation of an IUD is it necessary to return to a clinic.

Tables III.D.8 and 9 show the estimated costs per CYP highlighting differences in costs by contraceptive method and by place of provision (FWC, THC, or SC). Table III.D.8 shows differences in cost per CYP according to method used assuming that the method is provided at the FWC. The cost per CYP for injectables is higher than that for OCs or for IUDs because of

the high number of visits made to the clinic.[10] The high clinic cost for injectables is reflected in both the high costs of clinic labor and the high capital costs (which are proportionate to the use of clinic labor). Also contraceptive costs are higher for OCs and for injectables because these are re-supply methods with short duration of use while the cost of the IUD is spread over a long period of time. Finally, the costs of labor associated with the home service delivery program are an important component of all methods. Because FWAs visit IUD users less frequently, these costs are lower for users of this method.

Table III.D.8
Estimated Cost per CYP for Three Methods Provided by FWVs at FWCs

	Method:		
Input	OC	IUD	Injectable*
Clinic Visit Labor:			
Acceptance	14.3	23.5	20.5
Follow-up	1.9	6.2	35.5
Removal**	- -	10.8	- -
Supplies	2.1	3.0	4.5
Capital	13.5	33.7	46.7
Total Clinic	**31.7**	**77.2**	**107.3**
Home Visit Labor***			
Motivation	15.9	9.6	15.3
Follow-up	101.5	71.2	96.0
Total Home Visit	**117.4**	**80.8**	**111.3**
Contraceptives**	**110.0**	**23.3**	**120.0**
Grand Total	**259.1**	**181.3**	**338.6**

* Assumes two injections provided at clinic, three provided by FWA.
** IUD removal cost calculated from mean time for IUD removal observed at THC.
*** FWA follow-up visit costs include FWA and FPI labor.
**** Contraceptive cost assumes 13.6 cycles of OCs, 4 injections, or 1/2 IUD per CYP.

10 The determination of place of injectables provision, clinic versus home, was made after reviewing data from the DHS.

Table III.D.9
Estimated Cost per CYP for IUDs Provided at Three Types of Rural Clinics

	Clinic Type:		
Input	FWC	SC	THC
Clinic Visit Labor:			
Acceptance	23.5	31.5	14.4
Follow-up	6.2	8.7	4.6
Removal*	10.8	13.8	8.0
Supplies	3.0	3.6	5.0
Capital	33.7	0.0	16.0
Total Clinic	**77.2**	**57.6**	**47.9**
Home Visit Labor			
Motivation	9.6	9.6	9.6
Follow-up	71.2	71.2	71.2
Total Home Visit	**80.8**	**80.8**	**80.8**
Contraceptives	**23.3**	**23.3**	**23.3**
Grand Total	**181.3**	**161.7**	**152.0**

* IUD removal costs for all facilities calculated from mean time for IUD removal observed at THC

Table III.D.9 shows the impact of place of provision on costs per CYP for acceptors of IUDs. Costs per CYP are highest at the FWC. The differences are mainly due to higher capital costs at the FWC than at the THC and no capital costs at the SC.

III.E. Cost Impact of Different Scenarios

This section considers the impact of various changes in program structure and client behavior on contraceptive costs.

III.E.1. Scenarios to determine the impact on costs of changes in unoccupied time

Costs per CYP could be reduced if unoccupied time in clinics was reduced and if FWAs worked additional days and/or hours. This section considers both changes in work time for FWAs and for clinic staff.

III.E.1.a. The home service delivery program

The analysis for FWAs addresses the question of what would happen to costs and to visits if fieldworkers increased the number of work days (reducing to zero the number of days of unauthorized leave) and/or increased the time worked by one hour per day on home visit days. Figure III.E.1 shows schematically how increases in days worked and hours worked per day can result in a higher number of home visits. The dark shaded box shows the current production of visits based on 11.5 home visit days and 3.75 work hours per work day. The number of women that can be visited increases if the number of days worked increases but hours worked per day remains unchanged or if the number of work days remains constant but hours worked per day increase. Finally both days worked and hours worked per day may increase.

Figure III.E.1 Measuring the Impact of Increases in Number of Days and Hours Worked

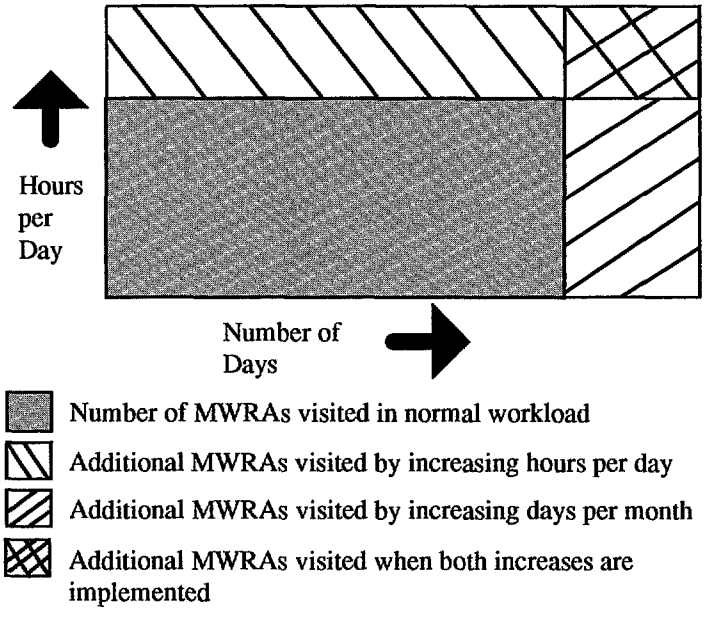


Table III.E.1 shows that labor costs per CYP would decrease substantially if unauthorized leave were eliminated, and/or if an extra hour of fieldwork were undertaken. By eliminating unauthorized leave (e.g., adding 6.2 work days per month allocated equally across monthly activities), the number of visits per month increases to 293 (from 219) and the labor cost per CYP reduces to 100 taka (from 122); this is an 18 percent reduction in costs. An extra hour of fieldwork per day also increases the output and decreases the labor cost per CYP. The combination of an increase in days and hours worked increases the number of monthly visits to 417 and decreases the labor cost per CYP by about 35 percent (to 79 taka).

Table III.E.1
Impact of Increased Productivity on Cost per CYP for OCs Provided by FWAs

	Scenario:			
Cost	Base	Extra Hour of Fieldwork Per Day	No Unauthorized Leave	Extra Hour and No Unauthorized Leave
Labor:				
FWA	96.2	74.3	78.8	62.0
FPI	25.5	19.7	21.5	16.7
Total Labor Cost	**121.9**	**94.0**	**100.3**	**78.7**
Contraceptives	**110.0**	**110.0**	**110.0**	**110.0**
Total	**231.9**	**204.0**	**210.3**	**188.7**
Number of Visits per Month	219	312	293	417

Note: FPI Cost per FWA visit decreases because FPI time supports larger number of FWA home visits.

What are the implications of these changes at the aggregate level? Table III.E.2 shows that an increase in days worked could either allow the program to increase the number of visits per MWRA from 3.6 to 4.8 per year or to reduce the number of FWAs to 17,000 and to have FWAs continue to make 3.6 visits per eligible woman per year. The latter option reduces the costs of salaries and benefits paid to FWAs from 740 million taka annually to 548 million. However, this change would imply that the number of MWRAs to be covered by each FWA would increase to 1000. Similar results are found in Table III.E.3 for the impact of an increase in the number of hours worked per day.

Table III.E.2
Scenarios for Increases in the Number of Days Worked

	Baseline	Increase in Number of Visits per MWRA	Cost Reduction
Number of home visit days	11.4	15.4	15.4
Number of home visits per day	19	19	19
Number of home visits per FWA per year	2600	3611	3611
Total Number of home visits by all FWAs (in millions)	59.8	80.8	59.8
Number of MWRA*	16.9	16.9	16.9
Number of visits per MWRA per year	3.6	4.8	3.6
Number of required/baseline FWAs	23,000	23,000	17,000
Salary + benefits (in millions of taka)	740	740	548

* 77% of 22 million MWRA

Table III.E.3
Scenarios for Increases in the Number of Hours Worked

	Baseline	Increase in Number of Visits per MWRA	Cost Reduction
Number of home visit days	11.4	11.4	11.4
Number of home visits per day	19	27	27
Number of home visits per FWA per year	2600	3694	3694
Total Number of home visits by all FWAs (in millions)	59.8	81.1	59.8
Number of MWRA*	16.9	16.9	16.9
Number of visits per MWRA per year	3.55	4.8	3.55
Number of required/baseline FWAs	23,000	23,000	16,188
Salary + benefits (in millions of taka)	740	740	520

* 77% of 22 million MWRA

III.E.1.b. Clinic-based services

For clinics, we assess the impact of an increase in demand for services supported by an increase at 50 percent of working time at the FWCs. Table III.E.4 shows that the cost of clinic visits per CYP for IUDs decreases from 77 to 52 taka or by about one-third. This is because labor and capital costs now produce a higher volume of visits thereby decreasing the labor and capital costs of visits. However, since other costs remain unchanged, the total percent change is only 15 percent.

Table III.E.4
Impact on Cost per CYP of 50% Increase in Time Spent Working for IUDs Provided at FWCs

Input	Current Cost:	Adjusted Cost:
Clinic Visit Labor:		
Acceptance	23.5	15.6
Follow-up	6.2	4.2
Removal*	10.8	7.2
Supplies	3.0	3.0
Capital	33.7	22.5
Total Clinic	**77.2**	**52.5**
Home Visit Labor		
Motivation	9.6	9.6
Follow-up	71.2	71.2
Total Home Visit	**80.8**	**80.8**
Contraceptives	**23.3**	**23.3**
Grand Total	**181.3**	**156.6**

*IUD removal cost calculated form mean time for IUD removal observed at THC.

III.E.2. Scenarios showing the impact of an increase in continuation rates

These scenarios show the impact of an increase in continuation rates on the cost per CYP. The first scenario considers the impact (Table III.E.5) of an increase in IUD use from an average of 24 to an average of 36 months or a 50 percent increase in length of use. Considering the sum of clinic costs and of contraceptives, costs decline from an average of about 100 to an average of 67 or by about one-third. This is because clinic costs are spread over a longer period of time. Finally, home visit costs per CYP remain almost unchanged (although the cost of the motivation

visit is spread over a longer time period), and thus become a higher proportion of costs. Because home visit costs change little, the total change in costs per CYP is only about 25 taka or about 15 percent.

Table III.E.5
Impact of Increased Continuation Rates on Cost per CYP for IUDs Provided at FWCs

Input	Average Number of Months Used: (24)	(36)
Clinic Visit Labor:		
Acceptance	23.5	15.6
Follow-up	6.2	4.2
Removal*	10.8	7.2
Supplies	3.0	2.0
Capital	33.7	22.5
Total Clinic	**77.2**	**51.5**
Home Visit Labor		
Motivation	9.6	6.4
Follow-up	71.2	71.2
Total Home Visit	**80.8**	**77.6**
Contraceptives	**23.3**	**15.5**
Grand Total	**181.3**	**144.6**

*IUD removal cost calculated from mean time for IUD removal observed at THC.

The next scenario considers alternative options for providing long-term contraception. It contrasts the costs per CYP of providing protection with two permanent methods with that provided by the IUD. In order to make the comparison, we assumed that a woman accepts an IUD at age 27, the average age of acceptance of tubal ligation, with the intention of using the IUD for permanent protection. The IUD is then replaced at the end of nine years and replaced with another IUD. Since the IUD has now been approved for ten years, it is appropriate to consider a use period of nine years under the assumption that use is motivated by the desire for permanent protection.

Table III.E.6 thus compares the cost per CYP for tubal ligation, vasectomy, and the IUD as a long-term method. For the IUD, cost per CYP is lower than shown in Table III.E.6 because clinic costs and the cost of the contraceptive itself are spread over a very long time period. The table shows that when clinic costs are considered, the IUD compares quite favorably with tubal

ligation and with vasectomy. IUD clinic costs are about one-quarter of tubal ligation costs and vasectomy clinic costs are lower than tubal ligation clinic costs. Within the category of clinic costs, it can be seen that much of the difference is due to supply costs which are far lower for IUDs than for vasectomy or for tubal ligation. Much of the difference in supply costs can be explained by the fact that there is no reimbursement to clients or physicians for IUDs as there is for sterilization. Considering labor and capital costs, tubal ligation costs are higher than those of the IUD or vasectomy.

Table III.E.6

Comparison of Cost per CYP for Tubal Ligation, Vasectomy, and IUD as a Reversible, Permanent Method Provided at THCs

Input	Tubal Ligation	Vasectomy	IUD*
Clinic Visit Labor:			
Acceptance	15.5	7.7	3.2
Follow-up	1.1	1.1	1.0
Removal	- -	- -	1.8
Supplies	26.5	18.8	1.1
Capital	2.2	1.2	3.5
Total Clinic	**45.3**	**28.8**	**10.6**
Home Visit Labor			
Motivation	1.1	1.1	1.0
Follow-up	24.2	32.8	61.3
Total Home Visit	**25.3**	**33.9**	**62.3**
Contraceptives	**- -**	**- -**	**5.2**
Grand Total	**70.6**	**62.7**	**75.5**

*Assumes IUD accepted at age 27; nine year continuation rate; second IUD accepted at age 36.

Table III.E.6 also shows that home visit costs are far higher for the IUD than they are for other methods. These higher costs are likely related to the current lower continuation rates for the IUD since it is currently used as a temporary rather than as a permanent method. It is likely that if this method were to be used for long periods then FWAs would begin to treat IUD acceptors like they treat sterilized women. That is, they would begin to visit them less frequently thereby decreasing the home visit component of costs. The costs of home visits are also higher for users of vasectomy than of tubal ligation but there were few respondents in the DHS that reported that their spouse had had a vasectomy; therefore, these differences may be smaller in the general population.

Because of the high cost of home visits, the cost per CYP is highest for the IUD although the difference is small. If home visit costs were equal for the three methods, the IUD would have the lowest cost per CYP followed by vasectomy and tubal ligation would have the highest cost per CYP.

III.E.3. Cost Impact Scenarios for the home service delivery program over the period 1994-2004

An important concern for the government of Bangladesh and for donors is how to meet the projected costs of the home service delivery program, and how to modify the program so that it more effectively meets the country's needs. This section of the paper shows various scenarios to project costs to the year 2004 by making various assumptions concerning improvements in efficiency.

Table III.E.7 shows the impact on costs of various scenarios to provide home visits to MWRAs in the year 2004 when their number would have increased to 31 million. The first column shows the baseline data for 1994. The second column assumes that the program will grow proportionately with the population of MWRA so that there will be 32,500 FWAs and 6,500 FPIs; salaries and benefits for those workers will total 1.3 billion taka, which is 40 percent higher than were the costs in 1994. This result is not surprising as the underlying assumption is that the program grows proportionately with the population in the fertile age groups.

Table III.E.7
Cost Projections for the Home Service Delivery Program for the Year 2004

	Baseline (1994)	Replication of 1994	No Unauthorized Leave	Work Hours Increase From 4 to 5	Combination of (3) and (4)
Number of home visits per month	11.4	11.4	15.4	11.4	15.4
Number of home visits per day	19	19	19	27	27
Number of home visits per year	2600	2600	3511	3694	4990
Number of home visits for all FWAs (in millions)	59.8	84.5	84.5	84.5	84.5
Number of MWRA (ELCOs) (in millions)*	16.9	23.8	23.8	23.8	23.8
Number of visits per MWRA	3.55	3.55	3.55	3.55	3.55
Number of MWRA per FWA	735	735	1000	1000	1400
Number of required FWAs	23,000	32,500	24,067	22,874	16,934
Salaries and Benefits of FWAs (in millions of taka)	740	1,044	776	740	544
Number of required FPIs	4600	6500	4813	4575	3387
Salaries and Benefits of FPIs (in millions of taka)	193	272	201	191	142
Salaries and Benefits of FWAs and FPIs (in millions of taka)	933	1,316	977	931	686

* Scenarios assume that the number of MWRA grows 2.8% per year from 22 million in 1994 to 31 million in the year 2004. Scenarios assume that the government program will continue to reach 77% of MWRA.

The last three columns of Table III.E.7 show the impact on costs of various increases in program efficiency. The third column shows the impact of increasing the number of days spent making home visits by reducing the number of days of unauthorized leave. Since this assumption leads to an increase in the number of home visits made by FWAs, and because it is assumed that there is no change in the number of visits made per year to each MWRA, the number of required FWAs increases only slightly as does the number of supervisors. Consequently the increase in the required number of FWAs and supervisors is small, and the calculated change in costs is also small. However, each FWA will now be responsible for close to 1000 ELCOs.

The fourth column of Table III.E.7 assumes that FWAs increase the number of hours that they work per day but that they do not increase the number of days that they work. The results are similar to those found in Column 3 in that total costs of salaries and benefits are almost identical in the year 2004 to what they were estimated to be in 1994. Finally, Column 5 combines the assumptions made in Columns 3 and 4 with the result that costs of salaries and benefits are actually lower in the year 2004 than they were in 1994. However, the number of MWRA or ELCOs per FWA is about twice as high in this scenario as in the year 1994.

IV. Key Findings

In this chapter we summarize the key findings of the study and discuss some of the implications of these findings.

Findings specific to the home service delivery program include the following:

1. FWAs work less than four hours per day, including travel time and time spent with clients. Travel time is twice as high as client contact time.

2. FWAs take unauthorized leave on about one-quarter of work days. FPIs take even more unauthorized leave than do FWAs.

3. FWAs are selective in terms of the clients that they visit; they visit a lower proportion of non-users and of users of traditional methods than is found in the general population.

4. In a very high proportion of visits, information on family planning and on MCH is not provided.

5. About 40 percent of OC users get their pills from a source other than FWAs.

Findings specific to the clinic program include the following:

1. Staff who work at GOB clinics in rural areas work about 4-5 hours per day; about one-third of time spent providing services at SCs and FWCs is for family planning, but the proportion is higher at THCs.

2. Low client load at clinics leads to a high percentage of unoccupied time. As a consequence, a high percentage of the cost of labor covers unoccupied time.

3. Visit costs at FWCs are higher than at SCs or at THCs primarily because of higher building costs.

Findings specific to the sterilization program include the following:

1. The labor cost for tubal ligation is about twice as high as for vasectomy which reflects both the lower cost for vasectomy procedures and the fact that vasectomy patients do not stay in the ward following surgery.

2. Operating theatres are often not open so that the cost of facilities must be spread over procedures that are carried out only on days when OTs are in operation; capital costs would be lower if a higher proportion of OTs were open.

3. Supply/materials costs are an important component of costs. These include reimbursements to clients and providers in addition to the costs of medical supplies.

4. The cost of a vasectomy is about two-thirds the cost of a tubal ligation.

Findings specific to the context of costs per CYP include the following:

1. Cost per CYP for injectables is the highest. This is because of the high number of clinic visits.

2. Of temporary methods, IUDs have the lowest cost per CYP primarily because of high continuation rates combined with no ongoing contraceptive costs.

3. The cost per CYP is lowest for permanent methods and for the IUD when it is used as a permanent method. The cost per CYP for the IUD when it is viewed as a permanent method compares favorably with that of tubal ligation and of vasectomy; moreover, clinic-related costs per CYP are lower for the IUD than for sterilization.

4. A high percentage of the cost of methods is for home visits. This is because users of all methods receive home visits whether or not they need services. However, reductions of the number of home visits will not reduce costs unless the number of workers is reduced; reducing the number of visits would simply reallocate these costs across the various contraceptive method groups.

5. The labor cost for the home visit component of service delivery could be considerably reduced if FWAs either increased the number of hours that they worked per day from about 4 to 5, or if they worked on the days on which they now take unauthorized leave.

6. The cost per CYP for the clinic component of service delivery could be reduced if the number of women who receive services at clinics were to increase.

V. Implications

The increase in the contraceptive prevalence rate over the last few years is due in large part to the growth of the home service delivery program. At the same time, that growth has undoubtedly also contributed to the proportionate decline in the use of long-acting and permanent methods and also to the lack of use of clinics. Now that the program is maturing, it may be an appropriate time to think about ways that it can be improved including changes in both the clinic and home service delivery programs.

Although the increase in contraceptive use has led to a fall in the total fertility rate, from 6.3 in the mid-1970s to 4.2 in 1990, the population of MWRA will continue to grow substantially over the next decade. If the current program structure is maintained, 32,500 FWAs and 6,500 FPIs will be needed by the year 2004. Given that donor resources are unlikely to keep pace with costs required to maintain the current program, decisions will need to be made as to how to cut costs while at the same time improving the quality of care. Thus, the GOB needs to consider how to strengthen management in order to increase performance levels of fieldworkers and supervisors. The purpose of this section, then, is to show how the study findings can be used to improve program performance.

Our calculations show that if fieldworkers were to increase the number of days and hours worked, that the costs of the program would change little over the next ten years and could even fall. An important question is whether these changes are realistic in that they assume an increased work effort on the part of fieldworkers. Other data from Bangladesh indicate that it is not unreasonable to expect fieldworkers to work additional hours and days.

Not only must management be strengthened, but in addition, technical issues concerning the appropriate job of the FWA also need attention. For example, given that FWAs spend a high proportion of their work days traveling, alternative service delivery strategies should be considered which can reduce travel time and increase client contact time (an example is a cluster visitation approach). Productivity of FWAs may increase by a reorganization of FWAs work plans among different sub-groups. For example, women who get their pills/condoms form a source other than the FWA, and clients who are established users of re-supply and clinical methods may

be contacted less frequently, while additional attention is paid to non-users, new users, and users having side-effects and other problems. As a consequence, contraceptive use and continuation rates would increase. Such changes would therefore decrease costs per CYP.

In the last several years, the number of FWCs has expanded while the use of long-acting methods has stagnated. As a consequence, there is underutilized capacity in the clinic program. As more women enter the childbearing ages, many of these women can be served using existing facilities. Decisions regarding clinic expansion should take into consideration that in the short run, these facilities are already underutilized. Moreover, provision of long-acting methods can be expanded at low cost by using the unoccupied time of FWVs.

An important concern for the program, therefore, is how to encourage the acceptance and continued use of long-acting methods. Efforts need to be made to encourage women to obtain methods at clinics. Moreover, improvements in the quality of care, for example, spending more time with clients, may raise continuation rates thereby lowering the costs per CYP.

The existence of two competing systems of service delivery, the home visit and clinic program, has implications for the costs of family planning service delivery. Efforts to reduce costs per CYP must take this fact into consideration. For example, acceptors of IUDs receive methods and follow-up visits at the clinic. However, the home visit costs constitute a significant part of the costs per CYP for IUDs. If the home visits were reduced then the costs per CYP for IUDs would decrease. However, this will not lead to any reduction in overall costs per CYP unless (a) the time saved of the FWAs is redirected in ways that can increase contraceptive use and continuation rates, or (b) there is a reduction in the number of FWAs. In the case of injectables, if home service delivery were to replace clinic visits, it would only reduce the costs per CYP for injectables without affecting the overall costs of family planning service provision since irrespective of whether the staff provides injectables at the clinics, the cost of operating the clinics remains the same. However, the overall costs per CYP will decrease if the time now spent by clinic service providers with injectable clients were spent with other types of clients.

The current structure of the family planning program has had remarkable success. The program has significantly increased awareness and use of FP services. The expansion of the home service delivery program has led to significant improvements in contraceptive use. Expansion of clinic facilities will allow increased provision of long-acting methods at low cost. However, challenges lie ahead, especially with regard to how to serve the growing number of MWRA under conditions of diminishing resources. This study points to areas which can be improved, and to strategies that

can be used to reduce costs. Changes in strategies and program structure will enable Bangladesh to make gains in contraceptive use, while at the same time increasing use of long-acting methods without significant increases in program costs.

Appendix

Appendix Table 1
Data Collection Scheme for Government Fixed Facilities

Title of Instrument	(A) Number of Divisions	(B) Number of Thanas	(C) Number/Type of Facility	(D) Number/Type of Subject	(E) Number of Days	(F) Expected Number of Analysis Units	(G) Actual Number of Analysis Units
Abstract	4	2	2 THCs	1 FWV	--	16	14
Abstract	4	2	4 FWCs	1 FWV	--	32	30
Abstract	4	2	4 FWCs	1 MA	--	32	31
Clinic Observation	4	2	1 THC	2 FWVs	6	96	78
Clinic Observation	4	2	2 FWCs	1 FWV	6	96	86
Clinic Observation	4	2	2 FWCs	1 MA	6	96	81
Clinic Observation	4	2	8 SCs	1 FWV	1	64	37
Secret Observation	4	1	1 THC	--	1	4	4
Secret Observation	4	2	4 FWCs	--	1	32	31
OT Staff Utilization	4	2	1 THC	--	6	48	21
OT Support	4	2	1 THC	MLSS/aya	--	16	15
Sterilization Client	4	2	1 THC	--	6	--	35

Appendix Table 2
Data Collection Scheme for Government Outreach Services

Title of Instrument	(A) Number of Divisions	(B) Number of Thanas	(C) Number/Type of Facility	(D) Number/Type of Subject	(E) Number of Days	(F) Expected Number of Analysis Units	(G) Actual Number of Analysis Units
Secret Observation	4	4	--	2 FWAs	1	32	32
Known Observation	4	4	--	2 FWAs	2	64	64
Known Observation	4	4	--	2 FWAs	4	128	128
Abstract	4	4	--	4 FWAs	--	64	64
Secret Observation	4	4	--	1 FPI	1	16	16
Known Observation	4	4	--	1 FPI	2	32	31

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