

Final Report

Systematic Review of Integration between Maternal, Neonatal, and Child Health and Nutrition and Family Planning

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Contributors

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Preliminary results from this review were circulated and reported to a variety of experts in MNCHN and FP, too numerous to name, who helped us to identify additional published articles and program reports and provided valuable comments, feedback, and suggestions.

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1. INTRODUCTION

1.1. Background

The Global Health Initiative (GHI) places a strong emphasis on integration and linkages of programs to address broad development challenges, and also providing a comprehensive package of services for the populations served (GHI 2010). At the international level, the importance of integrating maternal, neonatal, and child health and nutrition (MNCH-N) with family planning (FP) is well recognized as a key strategy, particularly for reducing maternal and child mortality. These two areas were highlighted at the 1994 International Conference on Population and Development in Cairo (Family Health International 1995) and are integral to successfully achieving the 2015 Millennium Development Goals for improving maternal health (MDG 2010). In addition, a recent report by the United Nations Population Fund (UNFPA) and the Guttmacher Institute found that linking MNCHN-FP services would cost approximately \$1.5 billion less than providing MNCHN services alone (UNFPA 2009). Despite these facts, there is limited information and evidence to guide policy action and program efforts on integration. There is a need to examine the efficacy and outcomes of MNCHN-FP integration and to identify how to effectively design and implement integrated programs.

Recently, a systematic review of linkages between sexual and reproductive health (SRH) and HIV/AIDS interventions was conducted by members of the Cochrane Review Group on HIV Infection and AIDS and collaborating partners (IPPF, UCSF, UNAIDS, UNFPA, WHO, 2008). However, while this review included MNCH as one category of SRH interventions, it did not focus on MNCHN interventions in particular, nor did it conduct as thorough a search as possible on all aspects of MNCHN that could be linked with FP interventions. In addition, this search identified articles and program reports published or presented before December 31, 2007.

The present review seeks to specifically focus on the MNCHN and FP components of SRH to examine the evidence for MNCHN-FP integration, review the most up-to-date factors that promote and inhibit program effectiveness, discuss best practices and lessons learned, and identify recommendations for program planners, policy makers, and researchers.

2. OVERVIEW

2.1. Objectives

To systematically review the literature on MNCHN-FP integration to address the following key questions:

- What are the key integration models that are available in the literature and have been evaluated?
- What are the key outcomes from these integration approaches?
- Do integrated services increase or improve service coverage, cost, quality, use, effectiveness and health?
- What are the quality of the evaluation study designs and the quality of the data from these evaluations?
- What types of integration are effective in what context?
- What are the best practices, processes and tools that lead to effective, integrated services? What are the barriers to effective integration?
- What the evidence/research and program gaps? What more do we need to know?
- How can future policies and programs be strengthened?

2.2. Definitions

In the literature on integration of services, there is growing agreement that there is no clear, agreed-upon definition of linkages or integration, and that the dichotomy between integrated and non-integrated services is false (Atun, et al., 2009). In fact, in reality most health services fall somewhere in between.

Linkages can occur at multiple levels. WHO, UNFPA, IPPF, & UNAIDS (2005) have defined linkages as “policy, programmatic, services and advocacy of bi-directional synergies” between MNCHN and FP. In contrast to linkages, which exist at multiple levels, they define integration at the service delivery level only, as “different kinds of services or operational programs joined together to ensure and perhaps maximize collective outcomes.”

Others have defined integration as “a variety of managerial or operational changes to health systems to bring together inputs, delivery, management and organisation of particular service functions. Integration aims to improve the service in relation to efficiency and quality, thereby maximising use of resources and opportunities” (Briggs & Garner, 2009). For the purposes of this review, we use this definition of integration. Linkages or integration can be bi-directional or offered simultaneously. For example, programs can combine FP-related topics with ongoing MNCHN issues, and, conversely, MNCHN-related topics with ongoing FP issues; or they can initiate both types of services at the same time.

Finally, this review focuses on interventions, and not observational research. An intervention is a combination “of technologies (e.g. vaccines, drugs), organizational changes, process modifications and other inputs related to decision-making, planning and service delivery” (Atun, et al., 2009).

2.3. Matrix of MNCHN-FP integration interventions

The matrix in Figure 1 was created to classify the different types of MNCHN and FP integration interventions. In this matrix, the columns represent FP interventions, while the rows represent MNCHN interventions. Each cell in the matrix is labeled with MF (for MNCHN-FP integration) and a number to designate the particular type of integration. MF1 is antenatal services integrated with FP education and counseling, MF2 is antenatal services integrated with contraceptive service/commodity provision, etc.

Figure 1. Matrix of MNCHN-FP integration interventions

		Family Planning Interventions*	
		Education and counseling	Contraceptive service/ commodity provision
MNCHN Interventions	Antenatal Services	MF1	MF2
	Post-Abortion Care	MF3	MF4
	Intrapartum/Childbirth Services	MF5	MF6
	Postnatal Care	MF7	MF8
	Infant/Child Services	MF9	MF10
	Nutrition Services	MF11	MF12

**Note: Both family planning education and counseling and contraceptive service/commodity provision may include referrals to these services.*

2.4. Methods

SELECTION OF STUDIES FOR INCLUSION

Types of participants

This review includes interventions in both high- and low-income countries, as defined by the World Bank (World Bank, 2007). No restrictions based on populations were made; all ages were included.

Types of interventions

Broadly defined, any intervention which implements an organizational or management strategy which aimed at integrating MNCHN and FP services, or different models of service delivery, was considered eligible for review. Services can be integrated in both directions, by integrating FP issues into ongoing MNCHN policies and programs, and conversely, MNCHN issues into FP policies and programs.

FP interventions are divided into two components:

1. **Education and counseling.** This includes any type of training and education, as well as individual, couples, and group counseling.
2. **Contraceptive service/commodity provision.** This includes modern contraceptive methods, natural family planning methods and the lactational amenorrhea method (LAM).

MNCH interventions are divided into six components:

1. **Antenatal services.** This category includes routine antenatal services for pregnant women including screening for anemia, syphilis, pre-eclampsia; tuberculosis (TB) screening, diagnosis and treatment; tetanus toxoid, iron/folate; malaria intermittent preventive therapy (IPT) and insecticide treated nets (ITNs); nutritional assessment, counseling and support; deworming; safe water and hygiene interventions; infant feeding counseling; community outreach to promote antenatal care (ANC) and facility delivery; and interventions to promote a delivery plan.
2. **Post-abortion care.** Care and medical treatment for women after any type of abortion, including incomplete, induced and spontaneous abortion. Post-abortion care includes three components: (1) emergency treatment for complications of spontaneous or induced abortion; (2) family planning counseling and services and, depending on disease prevalence and available resources, sexually transmitted infection evaluation and treatment, and HIV counseling and/or referral for testing; and (3) community empowerment through community awareness and mobilization.

3. **Intrapartum/childbirth services.** This category includes interventions for mothers and infants during the intrapartum/childbirth period, including interventions to prevent maternal hemorrhage; skilled attendant at delivery; emergency obstetric care; and active management of third stage labor
4. **Postnatal care.** This category includes essential newborn care interventions (thermal, cord care); resuscitation; infant feeding support-early and exclusive breast feeding; newborn immunizations; and the identification and treatment of newborn infections.
5. **Infant/child services.** This category includes interventions for infants and children up to the age of 5, including immunizations; growth monitoring; case management of pneumonia, diarrhea, fever, and sepsis; nutritional assessment; developmental assessment; malaria prevention and treatment; Vitamin A and other micronutrient supplementation; deworming; and safe water, sanitation and hygiene.
6. **Nutrition services.** This category includes interventions that focus on nutritional care for either adults or children, including nutritional assessment, counseling, support, treatment, and supplementation, regardless of location or population. For this reason, nutrition services may overlap substantially with other MNCH services; in this case, studies were included in both categories.

Note on condoms only as contraception: For the purposes of this review, if only condoms were provided with no additional family planning counseling and no additional contraceptive methods, this was not considered a family planning intervention, as condoms alone can be used for the purpose of HIV/STI prevention as well.

Note on MNCHN education-only interventions: We excluded interventions that only provided MNCHN education and did not offer any type of MNCHN services.

Types of study designs

To include a broad range of evidence, studies were included if they met the following inclusion criteria:

1. Published in a peer-reviewed journal between January 1, 1990 and April 30, 2010.
2. Presented post-intervention evaluation data of an organizational or management strategy, organizational changes, process modifications, or the introduction of technologies aimed at integrating MNCHN and FP service delivery, or of different models of or integrating MNCHN and FP service delivery. Studies must have evaluated the format of delivery of interventions that are assumed to be already needed or efficacious, rather than examine the efficacy of an intervention.
3. Used a pre-post or multi-arm comparison of individuals who received the intervention versus those who did not (according to the study design categories described below) to assess quantitative outcomes of interest (as described below).

Any intervention study involving a pre-post or multi-arm comparison of individuals or groups who received the intervention versus those who did not were included. This includes the following study designs:

1. **Randomized trial – Individual (experiment):** Minimum two study arms; random assignment of individuals or couples to study arm.
2. **Randomized trial – Group (experiment):** Minimum two study arms; random assignment of groups, classrooms, towns, clinics, etc.) to study arm.
3. **Non-randomized “trial” – Individual*:** Minimum two study arms; assignment of individuals to study arm, but not done randomly.
4. **Non-randomized “trial” – Group*:** Minimum two study arms; assignment of groups to study arm, but not done randomly.
5. **Before-after study:** Pre- and post-intervention assessment among the same individuals. One study arm and one follow-up assessment period.
6. **Time series study:** Pre-intervention and several post-intervention assessments among the same individuals. One study arm and multiple follow-up assessment periods.
7. **Case-control study:** Two groups defined by outcome measures, one consisting of cases and one consisting of controls. To be included, the study must compare outcomes between those who got the intervention and those who did not.
8. **Prospective cohort:** Two or more groups defined by exposure measures and followed over time.
9. **Retrospective cohort:** Two or more groups defined by exposure measures, but uses previously collected or historical data.
10. **Cross-sectional:** Exposure and outcome determined in the same population at the same time. To be included, the study must compare outcomes between those who got the intervention and those who did not.
11. **Serial cross-sectional:** When a cross-sectional survey is conducted in a population at multiple points in time with different people in that population. To be included, the study must compare outcomes between those who got the intervention and those who did not.

*If study design 3 or 4, non-randomized allocation method must have been specified.

Studies must have included a quantitative comparison of individuals or groups who received the intervention versus those who did not, or a comparison of individuals or groups before and after receiving the intervention. Studies could have had either a control or a comparison group. A control group is a study arm that does not receive any type of intervention. A comparison group is a study arm that receives an intervention, which may be the standard of care, a less-intensive form of the intervention, or a separate intervention unrelated to the integration of MNCHN and FP.

When both or all comparison groups in a study received an integrated intervention, we used the following criteria to determine if the study should be included:

We ***included*** studies in which the comparison group(s) received a different extent of integration. For example, we included studies in which one group received onsite integrated services and the other group received a referral. These studies allow us to learn more about integrated interventions by evaluating the advantages and disadvantages of more extensive vs. less extensive linkages.

We ***excluded*** studies in which both groups received integrated services, but the difference in the services only consisted of different clinical interventions which can be considered the same level of integration. For example, we excluded studies in which both comparison groups receive FP commodities (e.g. one group of postpartum women received a hormonal contraception whereas the other group of postpartum women receives an IUD). These studies do not shed light on the advantages and disadvantages of linkage interventions.

Types of outcome measures

The following 16 key outcomes were extracted from the included studies: (1) mortality (including maternal mortality, infant mortality, etc.); (2) morbidity (including maternal, infant, etc.); (3) STI incidence; (4) unintended pregnancy; (5) condom use; (6) family planning use; (7) unmet FP need; (8) vaccination coverage for infants or children; (9) infant/child nutrition; (10) attended or safe deliveries; (11) breastfeeding; (12) use of FP or MNCHN services; (13) coverage of FP or MNCHN services; (14) quality of FP or MNCHN services; (15) cost or cost-effectiveness; and (16) stigma.

Throughout the report, the “pregnancy” outcome is inclusive of all reported pregnancy outcomes, including unplanned pregnancy, pregnancy outcomes that were not defined as being planned or unplanned, and whether or not those pregnancies ended in abortion. The “unplanned pregnancy” outcome is limited to only those studies that specified unplanned pregnancy as an outcome. Furthermore, a distinction is made throughout the report between the outcomes “family planning use,” and “use of MNCHN or FP services.” The latter category includes use of family planning services, such as participating in family planning counseling, whether or not a family planning method was actually accepted by the subject. It also includes use of MNCHN services such as antenatal care, postpartum care, and well baby care.

All other clinical, behavioral, programmatic, knowledge, or cost outcomes were recorded, but complete data were not extracted. Both FP-related outcomes and MNCHN-related outcomes were included, as will both individual-level and program-level outcomes. Programmatic outcomes, such as access and uptake of services, were included, but process outcomes, such as number of commodities distributed or number of providers trained, were not included.

Language

No language restrictions were imposed, and translations were sought where necessary.

Unpublished studies

Unpublished program reports, conference abstracts, posters and powerpoint presentations, and other unpublished studies that otherwise met the above inclusion criteria, were compiled and reviewed in a narrative format. A particular emphasis was given to unpublished studies that covered different types of integration models or different evaluation strategies than were covered in the published articles.

SEARCH STRATEGY

To compile the most complete list of articles meeting the inclusion criteria, four different methods were used to search the literature: electronic database searching, handsearching of the reference lists of key journals, cross-referencing of the reference lists of related articles and reviews, and interpersonal communication with experts in the fields of MNCHN and FP. In addition, online searches of organizations implementing MNCHN-FP integration interventions were conducted.

Electronic databases

The following electronic databases were searched:

1. PubMed (including MEDLINE and AIDSLINE)
2. Cumulative Index to Nursing and Allied Health Literature (CINAHL)
3. EMBASE (Excerpta Medica) [Cochrane HIV/AIDS search strategy]
4. Popline

Search terms

Electronic database searching was conducted based on all possible combinations of FP terms, MNCHN terms, study design terms, and population terms listed below:

FP terms: family planning, family planning counsel*, family planning educ*, reproductive counsel*, couples counsel*, reproductive planning, reproductive rights, contraception, contraceptive, birth control, birth spacing, condoms, pill, microbicide, diaphragm, IUD, cervical cap, abortion, pregnancy termination, termination of pregnancy, post-abortion, manual vacuum aspiration, post-abortion care, post-abortion treatment, contraception, natural family planning OR NFP, lactational amenorrhea method OR LAM, periodic abstinence, rhythm method, calendar method, symptothermal method, cervical mucus, sexual abstinence, cervical secretion, Billings method, Creighton method, basal body temperature, cycle beads, two-day method, personal hormone monitoring.

MNCHN terms: maternal health, maternal child health, neonatal, women's health, obstetric*, gynecolog*, gynaecolog*, antenatal care, ANC, prenatal care, postnatal care, intrapartum, birth, childbirth, pregnancy, labor, delivery, anemia, syphilis, pre-eclampsia, tuberculosis, TB, tetanus, iron, folate, malaria, intermittent preventive therapy OR IPT, insecticide treated net, ITN, nutrition, safe water, hygiene, sanitation, infant feeding, facility delivery, delivery plan, hemorrhage, skilled attendant, third stage labor, EOC, active management, essential newborn care, thermal cord care, resuscitation, infant

feeding counsel*, breastfeeding, immunization, vaccination, infection*, growth monitoring, baby weighing, pneumonia, diarrhea, diarrhoea, fever, sepsis, vitamin A, folic acid, iron, micronutrient, deworming, severe bleeding, hemorrhage, eclampsia, obstetric fistula, pneumonia, pneumococ*.

Study design terms: RCT, non randomized trial, before after study, time series study, case control study, prospective cohort, retrospective cohort, cross-sectional, randomized controlled trial, randomized clinical trial, controlled clinical trial, random*, control*, prospective*, [NOT animal*]

Population terms: maternal, mother, woman, women, female, child*, baby, babies, infant*, parent*, pregnan*, fetus, fetal, stillbirth*, newborn, neonat*, preterm*, prematur*, postmatur*, school age*, preschool*, kid, kids, toddler, adolescent, minors, teen boy, girl, puberty*, pubescen*, prepubescent*, pediatric*, paediatric*, peadiatric*, schools, nursery school*, kindegar*, primary school*, secondary school* elementary school*, high school*, highschool*

Handsearching

Handsearching was conducted on the following key journals:

1. Health Policy
2. Perspectives on Sexual and Reproductive Health (formerly Family Planning Perspectives)
3. International Perspectives on Sexual and Reproductive Health (formerly International Family Planning Perspectives)
4. The Journal of Family Planning and Reproductive Health Care
5. Studies in Family Planning
6. Reproductive Health Matters
7. Pediatrics
8. Pediatric Infectious Diseases
9. International Journal of Gynecology & Obstetrics
10. Contraception
11. Social Science and Medicine
12. Lancet
13. Lancet Infectious Diseases

The tables of contents of these journals was searched from January 1, 1990 through April 30, 2010. Articles that looked potentially relevant were compared with the full list of articles generated by electronic database searching to determine if they had already been identified. If they had not been identified, the title and abstract were screened to determine if the inclusion criteria were met.

Cross references

The reference lists of selected reviews, articles, websites, and reports related to MNCHN and FP integration were reviewed for additional citations.

Interpersonal communication

Experts in the field of MNCHN-FP integration were contacted to identify additional articles that the original searches may have missed.

Online searches

In addition to the four search strategies listed above, additional online searches were conducted to identify unpublished studies meeting the criteria for the review. The following websites were searched:

- “Implementing Best Practices in Reproductive Health – Knowledge Gateway” website (www.ibpinitiative.org) [online forum for HIV-SRH integration, including library of relevant documents from participating organizations]
- “Women Deliver” website and conferences (www.womendeliver.org)
- “Access FP” website (www.accessfp.net)
- WHO website and WHOLIS
- Websites of relevant implementation organizations, specifically: Advance Africa, Catalyst Consortium, CEDPA, DFID, EngenderHealth, FHI, ICRW, INFO Project, IGWG, IPPF, IntraHealth International, Global Fund, JHPIEGO, JHUCCP, John Snow Inc., Management Sciences for Health, Partners in Population and Development, PATH, Pathfinder, PEPFAR, Pop Council, PSI, UNFAO, UNFPA, and UNAIDS.

SCREENING

All citations identified through the search strategies were screened by a single researcher based on their titles and abstracts. Citations that clearly did not meet the inclusion criteria were excluded. Citations that might meet the inclusion criteria were screened by a second researcher. For all studies that were not excluded at this stage, the full articles were downloaded and screened using the review inclusion criteria.

DATA EXTRACTION AND MANAGEMENT

Peer-reviewed articles

Each article was read and data extracted by two separate members of the study team. Differences in data extraction or interpretation of studies were resolved by discussion and consensus.

For each study, the following information was extracted and presented in the following tables:

Table 1: Study descriptions: Information on study authors, matrix cells, location, setting, target group, years of program, years of evaluation, name of program, intervention, study design, unit of analysis, sample size, age, gender, and length of follow-up.

Table 2: Study outcomes: Information on study authors, intervention, study design, reported numerical outcomes and results (health, behavioral, knowledge/attitudes, and process), and text summary of outcomes.

Table 3: Study rigor: Assessment of study rigor on a 9-point scale, with minimum score (low rigor) of 1 and maximum score (high rigor) of 9. Studies receive one point for meeting each of the following criteria: (1) Study design includes pre/post intervention data, (2) Study design includes control or comparison group, (3) Study design includes cohort, (4) Comparison groups equivalent at baseline on socio-demographics, (5) Comparison groups equivalent at baseline on outcome measures, (6) Random assignment (group or individual) to the intervention, (7) Participants randomly selected for assessment, (8) Control for potential confounders, (9) Follow-up rate $\geq 75\%$. This scale was based on the 8-point rigor assessment scale for systematic reviews of HIV behavioral interventions by the Johns Hopkins – WHO Synthesizing Intervention Effectiveness project (Kennedy et al., 2007; Denison et al., 2008).

Table 4: Integration implementation: Information on integration direction, setting, goal of the study, format of integration (on-site, referral, etc.), extent of integration (full, partial, or none), level of integration (local, district, regional or national), promoting factors, inhibiting factors, recommendations, and any other relevant information reported in the study.

Non-peer-reviewed program reports

The findings of all non-peer-reviewed program reports were summarized in a brief narrative.

3. RESULTS

3.1. Search results and flow chart

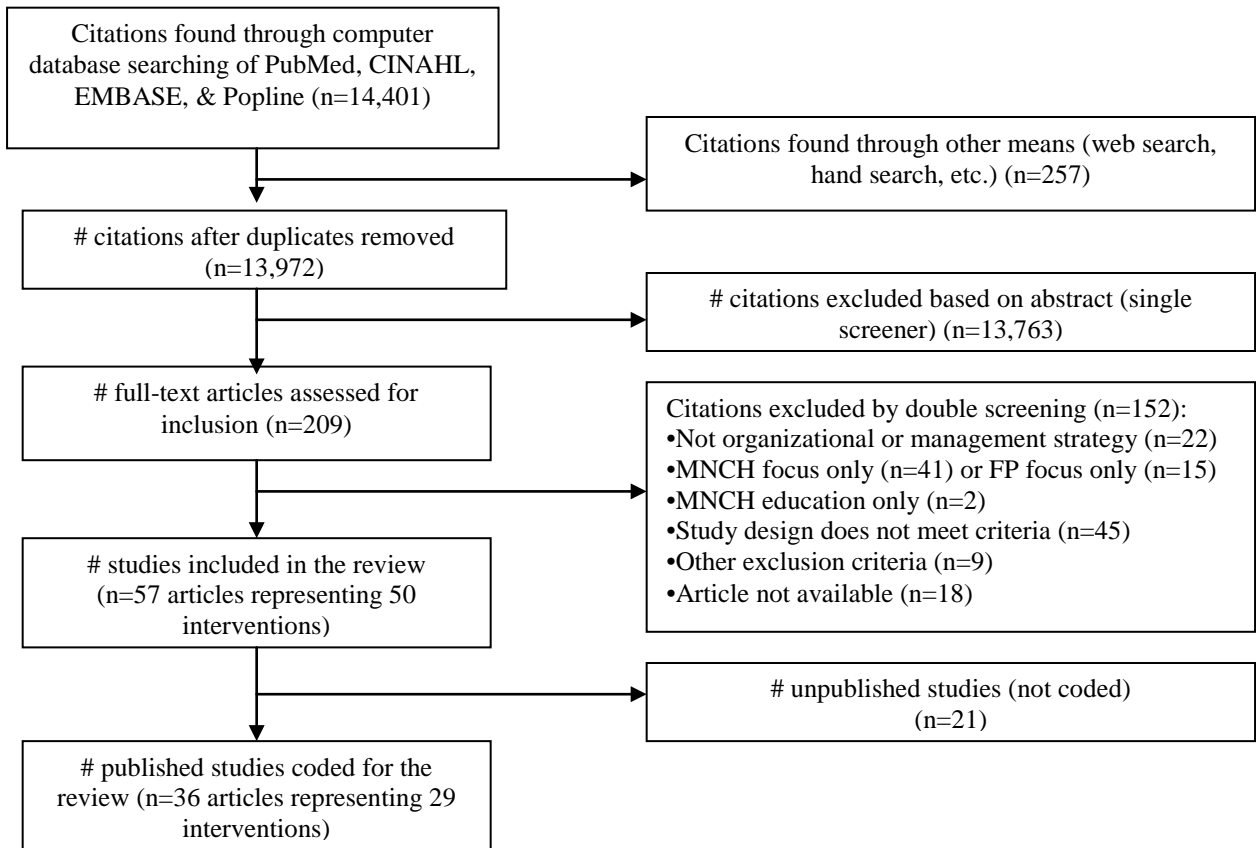
Electronic database searching was completed in May 19, 2010 (for citations through April 30, 2010) and yielded 14,401 citations (Figure 2). In addition to electronic database searching, handsearching, cross-reference searching, and interpersonal communication were also used to identify articles. Combined, these additional search methods added 257 citations. After duplicates were removed, 13,972 citations remained to be screened. Because of the large number of identified studies, these citations underwent a preliminary screening by a single screener to remove articles that were clearly not relevant to the review. This preliminary screening was based on the titles, abstracts, journals, and keywords of the articles, and the screener was instructed to err on the side of inclusion and only remove citations that were clearly not relevant to the review. The initial screening resulted in 13,763 citations being excluded from the review, with 209 remaining. These 209 citations were double-screened by two members of the study team who worked independently, then compared results and resolved any differences through discussion. When there was not enough information provided in the abstract, the full articles were reviewed to determine inclusion or exclusion from the review.

Of the 209 remaining studies, 152 were excluded for the following reasons:

- Not organizational or management strategy (n=22)
- MNCHN focus only (n=41) or FP focus only (n=15)
- MNCHN education only (n=2)
- Study design does not meet criteria (n=45)
- Other exclusion criteria (n=9)
- Article not available (n=18)

These exclusions left a total of 57 articles representing 50 interventions. Twenty-one of these were not published in the peer-reviewed literature, and so full data extraction was not conducted. These studies are summarized separately. In total, 36 articles representing 29 distinct interventions met the inclusion criteria and were included in the review. A flow chart showing the disposition of citations during the search process, along with reasons why citations were excluded, is provided in Figure 2.

Figure 2. Flowchart of search and screen process



3.2. Matrix of included studies

A total of 36 articles representing 29 interventions met the inclusion criteria. These articles reported on a wide range of interventions that covered all of the types of integration in the matrix. The breakdown of included articles by type of integration is reported in Figure 3. Several studies included multiple types of integration, so the numbers reported here exceed the total number of studies included in the review.

Figure 3. Matrix of peer-reviewed study results by type of linkage

		Family Planning Interventions	
		Education and counseling	Contraceptive service/ commodity provision
MNCHN Interventions	Antenatal Services	10	4
	Post-Abortion Care	10	7
	Intrapartum/Childbirth Services	3	2
	Postnatal Care	11	7
	Infant/Child Services	16	10
	Nutrition Services	5	3

3.3. Key characteristics of included studies

The search and screening process resulted in a total of 36 articles reporting on 29 distinct interventions. There was heterogeneity among the studies in terms of study objectives, types of interventions, study designs, locations, and reported outcomes. Below are some of the key characteristics across the studies:

- Region
 - 10 Sub-Saharan Africa
 - 9 South Asia
 - 3 Latin America
 - 2 East Asia
 - 1 each Russia, Syria, Italy, U.S., and Australia
- Setting
 - 16 in clinic/hospital settings
 - 5 in the community
 - 8 in both
- Direction of integration (studies can be in more than one category)
 - 16 integrated FP services into existing MNCHN programs
 - 2 integrated MNCHN services into existing FP programs
 - 13 integrated new MNCHN and FP services simultaneously
- Target populations
 - All targeted women
 - 2 also targeted men
 - 2 targeted adolescents
- Study design rigor
 - 7 randomized control trials
 - Average rigor score = 3.2 out of 9 (range: 1-8)

3.4. Promoting and inhibiting factors

In Table 4, we extracted data from each article about the factors that authors reported either promoted or inhibited integration. These were usually mentioned in the discussion sections of the articles. These factors were not measured and were not reported as quantitative outcomes, yet they were found to have a significant effect on the success or failure of the integration interventions. These factors are enumerated in Table 5, grouped according to general areas.

Table 5. Factors promoting and inhibiting integration

Integration Promoting Factors	Integration Inhibiting Factors
Providers	
<ul style="list-style-type: none"> ▪ Effective provider training ▪ High retention of staff enabled trainers to develop trusting relationships with target population, and provide a consistent message and detailed case management ▪ Provider interest in providing better services to clients ▪ Provider acceptance of new staffing and responsibilities ▪ Flexibility of staff to identify problems, think of alternatives, to test and measure these new ideas, and to institutionalize the changes during implementation 	<ul style="list-style-type: none"> ▪ Staff turnover and resistance to changing practices ▪ Providers being overextended and having too high workload ▪ Pressure on staff to maximize delivering commodities without sufficient client education or guidance ▪ Training is time consuming and labor intensive ▪ Difficulty in identifying adequate numbers of providers to hire, particularly for roles requiring new techniques ▪ Lack of ongoing supportive supervision and continuing education for providers ▪ Midwives recruited from a hospital and not from the community might have lacked sufficient communication skills and connection to the community ▪ Insufficient community health worker training and politicization of worker selection ▪ Staff inabilities to address needs of different client populations (e.g. sex workers)
Contraceptive commodities	
<ul style="list-style-type: none"> ▪ Large selection of contraceptives and promotion of informed free choice of contraceptives ▪ Free contraceptives ▪ Existing onsite availability of contraceptive methods ▪ Higher use of injectables may have contributed to greater client satisfaction: clients in many developing countries consider 	<ul style="list-style-type: none"> ▪ Cost and logistics of commodity procurement and supply ▪ Numerous alternative sources of contraceptives inhibited clients from seeking FP services ▪ For interventions offering only FP counseling and education, lack of contraceptive commodities may have inhibited uptake of modern contraceptives

Integration Promoting Factors	Integration Inhibiting Factors
<p>injections to be more effective than orally administered medication</p>	<ul style="list-style-type: none"> ▪ Drug supplies often run out, so staff protect stock over supplying them to clients
<p>Cultural context</p>	
<ul style="list-style-type: none"> ▪ Personalized, culturally appropriate education to clients ▪ Use of a previously evaluated curriculum that was culturally and age appropriate to the target population ▪ Female outreach workers can serve as agents of change of cultural norms and bridges to the outside world for women who are socially secluded 	<ul style="list-style-type: none"> ▪ Social constraints and cultural barriers to adoption of contraception ▪ Male involvement in some cases considered culturally unacceptable ▪ Inherited practices and attitudes are difficult to change, such as underestimating fertility in the postpartum period and perceiving postpartum morbidity to be normal
<p>Cost</p>	
<ul style="list-style-type: none"> ▪ Adequate financial support for integrated services ▪ Marginal cost of integration can achieve substantial results 	<ul style="list-style-type: none"> ▪ High cost of deploying community health workers ▪ High cost of provider training ▪ Challenges in recovering costs of services ▪ Funding limitations to provide sufficient services ▪ High cost of services compared to the income level of the population ▪ Lack of insurance by the study sample as a barrier in access to care
<p>Logistics and coordination</p>	
<ul style="list-style-type: none"> ▪ Strong internal communication between staff in different departments ▪ Excellent internal organization of the existing clinic sites ▪ Availability of health care equipment ▪ Simple referral message that is easy for clients to understand ▪ Ability of community health workers conducting home visits to identify serious cases, make referrals and appointments for clients, and provide transportation ▪ Linkages between the community and the intervention program through a network of volunteers ▪ Availability of a private room for counseling onsite ▪ Establishing indicators at the outset and monitoring and measuring change 	<ul style="list-style-type: none"> ▪ Lack of coordination between providers, such as physician and community health worker, and providers from different hospital units ▪ Challenge of patient flow and stigma when patients are referred from one ward to another ▪ Lack of provider checklist makes it difficult to make changes in provider behavior ▪ Time-consuming administrative forms and requirement to discuss all possible contraceptive methods

Integration Promoting Factors	Integration Inhibiting Factors
Other	
<ul style="list-style-type: none"> ▪ Strong demand for contraception and/or a large unmet need for family planning ▪ Availability and accessibility of a well-managed high-quality static health clinic ▪ Home visits were highly valued ▪ Simplicity of services make them applicable to the primary clinic level and therefore make services more accessible ▪ Outreach to community decision-makers and stakeholders ▪ Clients perceived value of services promoted client retention ▪ Involvement of traditional health workers ▪ Strong existing programs draw clients into a clinic ▪ Patient centered model and emphasis on quality of care ▪ Provision of FP services at critical times for the woman (e.g. immediately post-abortion or postnatally) ▪ Involvement of men and male endorsement of FP ▪ Country's health policy prescribes integration of family planning services in general outpatient activities 	<ul style="list-style-type: none"> ▪ Brief duration of intervention, making it difficult to change behaviors ▪ Lapses in program intensity can lead to widespread discontinuation of contraceptive use ▪ Availability of other sources of reproductive health services ▪ High commitment demanded from clients for follow-up appointments and intensive breastfeeding ▪ Provision of information and counseling without an explicit mechanism to address client motivations for childbearing postponement ▪ Time consuming nature of extensive data collection ▪ Efficacy of a community-level intervention depends on the successful functioning of higher levels of the health system

3.5. Outcomes analysis

In order to quantify the outcomes across studies, studies were classified as having a positive, negative, mixed, or no effect on outcomes. A positive effect meant that the intervention was associated with an improvement in the outcome. A mixed effect meant that there were multiple measures of an outcome that showed inconsistent results. No effect meant that there was no difference in the outcome associated with the intervention. A negative effect meant the integrated intervention was associated with a worse outcome.

Table 6. Direction of effect of outcomes of included studies

Outcome	# studies reporting this outcome	Average rigor score of related studies	# studies that showed a positive effect	# studies that showed a mixed or no effect	# studies that showed a negative effect
Health outcomes					
Mortality	6	3.78	1	5	0
Morbidity	5	4.40	4	1	0
STI incidence	0	-	-	-	-
Pregnancy	10	4.00	4	6	0
Unplanned pregnancy	4	3.75	2	2	0
Abortion	2	5.00	0	2	0
Infant/child growth	4	4.17	2	2	0
Behavioral outcomes					
Condom use	3	4.33	3	0	0
Family planning use	26	3.22	19	7	0
Breastfeeding	4	5.75	1	3	0
Process outcomes					
Unmet FP need	1	1.00	1	0	0
Attended or safe deliveries	1	2.67	1	0	0
Use of FP or MNCH services	12	2.22	11	1	0
Vaccination coverage	4	3.50	1	3	0
Coverage of other FP or MNCH services	1	2.00	1	0	0
Quality of FP or MNCH services	15	2.20	11	4	0
Cost or cost-effectiveness	4	2.17	4	0	0
Stigma	0	-	-	-	-

Findings for key categories of outcomes

Based on the above table, the outcomes of all included studies were assessed to determine if the body of evidence supports an integrated approach to offering MNCHN and FP services.

Coverage

Of the four studies that reported vaccination coverage as an outcome, only one demonstrated an improvement in vaccination coverage as a result of the integrated

intervention. The remaining three interventions had either mixed or no effect on vaccination coverage. One of these four studies also reported a different coverage outcome (availability of a private doctor or a government health center), and it found an increase in coverage as a result of the intervention. No studies reported that coverage decreased as a result of the intervention.

Quality of care

A total of 15 studies reported on quality of care as an outcome. Quality was measured using a variety of methods, such as client satisfaction measures, quality index scores, and proportion of clients receiving certain types of support and information. Eleven of the 15 studies reporting quality outcomes found that the integration intervention improved quality, while the remaining four studies found either mixed or no effect on quality. No studies reported that quality decreased as a result of the intervention.

Use of MNCHN and FP services

Twelve studies reported use of MNCHN and FP services. This category included use of antenatal care, post-abortion care and family planning services (though not necessarily use of a contraceptive method); infant follow-up visits; immunizations administered; and visits to clinics. All but one study found that use of MNCHN and FP services increased as a result of the integrated intervention; the remaining study found that use of MNCHN and FP services did not change. No studies reported that use of MNCH and FP services decreased as a result of the intervention.

Cost and cost-effectiveness

Only four studies reported either absolute cost or cost-effectiveness, and all four studies demonstrated either a decrease in cost or an improvement in cost-effectiveness as a result of the intervention. Two studies found that cost per visit or per service decreased after an integrated intervention had been implemented. The other two studies also showed increased cost-effectiveness, although upfront costs were higher for the integration intervention.

Effectiveness

Measures of effectiveness included health and behavioral outcomes. The most commonly reported behavioral outcome was family planning use. Of 26 studies reporting this outcome, 19 found an increase in family planning use as a result of the integrated intervention, whereas seven found mixed or no effect. The most commonly reported health outcome was subsequent pregnancy. Of ten studies reporting this outcome, four found a decrease in pregnancy as a result of the integrated intervention, whereas six found mixed or no effect. (Only four of the ten studies specifically measured unplanned pregnancies; two found a decrease and two found mixed or no effect). Results were similar for other health and behavioral outcomes, with some studies finding a positive effect and others finding mixed or no effect. No studies reported negative outcomes for any health or behavioral outcomes.

3.6. Service-based analysis and case studies

Studies were heterogeneous in terms of study objectives, types of interventions, study designs, locations and reported outcomes. Therefore, a meta-analysis was not conducted. However, studies were sorted by six models of integration based on the type of MNCHN service being integrated with family planning. Many studies fell into more than one integration model and are therefore included in each. A case study was chosen for each of the six groups; a case study follows each service-based analysis.

3.6.1. Antenatal care and family planning services

Studies	10 peer-reviewed studies (Agha 2007, Alvarado 1999, Barnet 2007, Delvaux 2008, Murray 1990, Paxman 2005, Routh 2001, Sathar 2005, Vernon 1993, Matlab articles)	
Locations	1 in Chile 1 in Honduras 2 in Bangladesh 1 in Pakistan	1 in Nepal 1 in India 1 in Kenya 1 in Cambodia 1 in the USA
Interventions	<ul style="list-style-type: none"> All interventions integrated some form of antenatal care services with family planning education and counseling including comprehensive integration with other FP/MNCHN components, particularly postnatal care and infant/child growth. Contraceptives were provided in 4 out of 10 studies. Two studies included men (partners/spouses of pregnant women) as part of their target population. Four studies were conducted in clinics, four were carried out as community-based interventions, and two studies had both clinic and community sites as their point of intervention. Six studies simultaneously integrated FP and MNCHN services as part of the intervention; two studies added FP into their existing MNCHN services; one study strengthened existing FP-MNCHN services by adding an additional MNCHN component; and one study incorporated both an integrated FP/MNCHN service and compared it to an intervention that added FP into its existing MNCHN services. 	
Study Designs	1 randomized controlled trial 2 non-randomized trials 1 before-after 4 serial cross-sectional	1 cross-sectional 1 multiple evaluations (2 cross-sectional and 4 serial cross-sectional)
Reported Outcomes	<p><u>Health outcomes:</u> Maternal morbidity and mortality, infant morbidity and mortality, pregnancy, unplanned pregnancy, infant/child growth</p> <p><u>Behavioral outcomes:</u> Family planning use (acceptance, uptake, and discontinuation), pre- and post-abortion family planning, antenatal care use, and breastfeeding</p> <p><u>Process data/outcomes:</u> Vaccination coverage, coverage and use of FP or MNCHN services, quality of services, cost/cost-effectiveness</p>	
Findings	<p>Coverage</p> <ul style="list-style-type: none"> Only one of the ten studies reported on coverage of MNCHN-FP services. This study found that vaccination coverage increased as a result of the integration. <p>Quality of care</p> <ul style="list-style-type: none"> Seven studies reported change in quality of services; five found a positive effect, one found a mixed effect, and one found no effect. <p>Use of MNCHN and FP services</p> <ul style="list-style-type: none"> Seven studies reported use of MNCHN or FP services; one found a mixed effect and six found a positive effect. 	

Cost

- Three studies reported cost and all found a positive effect. Though the initial costs were higher in the integrated service interventions, two studies documented greater cost-effectiveness in terms of births averted in the intervention group arm (for one it was a fixed-site integrated service delivery package) when compared to groups receiving no intervention or a less-intensive integrated delivery package.

Effectiveness

- One study reported on infant mortality and found a positive effect in which infant mortality rates in one group of women who received FP education and counseling from community-based health workers were lower (5.2%) compared to the group of women who did not receive the intervention (7.2%; significance not reported).
- Looking at the compiled Matlab studies however, four studies reported mixed effects on infant and maternal mortality. Of the two studies that reported maternal mortality, one found a positive effect where the total number of direct obstetric deaths was much lower in the treatment group compared to the comparison group, though significance was not reported. In one study, the authors did not report significant results for direct obstetric mortality between groups (RR=1.00 [0.96-1.05], p=0.93). In terms of infant mortality, two studies reported mixed results. One study showed an overall sustained decrease in perinatal mortality from 1979 (8.2% for both treatment and control groups) to 1986 (treatment group = 6.6%; control group = 6.8%), where significance were not reported. It should be noted that actual number of live births remained roughly the same in both treatment and comparison groups.
- Two studies reported morbidity and found a positive effect. One study reported significant results for infant morbidity rates between control and intervention groups (diarrhea: unadjusted RR = 11.3, p<0.001; hospitalization: unadjusted RR = 3.3, p=0.02). One study reported a sustained decrease over a 3-year period (2002: 9.4% vs. 2005: 1.3%, significance not reported) in complications during intervention after safer abortion was introduced at a clinic that offered ANC, FP, and STI screening.
- One study reported attended safe deliveries and reported a positive effect, as measured by admissions to Matlab maternity clinics (as proportion of live births). Specifically, 65% of admissions were from the treatment area compared to 33% from the comparison area (RR = 2.31, SIG, no p-value reported).
- Out of four studies reporting pregnancy, two found no effect, one found a mixed effect, and one found a positive effect, where mean number of children born to women in the intervention group was consistently lower than women in the control group, across age groups.
- Eight studies reported family planning use: four found a positive effect; four found mixed effects.

Rigor

- The rigor score of these 10 studies was generally low. Out of a possible score of 9, nine studies had scores of 4 or less and only one study had a score of 7.

Promoting and inhibiting factors

- A number of promoting factors behind the success of these integrated services include: availability of preferred contraceptive method of choice, autonomy in contraceptive choices, quality of care (cleanliness, confidentiality, client-centered), on-site integrated services, motivated providers and staff, monitoring indicators to measure change, and excellent referral systems.
- A few inhibiting factors were also reported, specifically: incompatible services offered by providers with the expansion of services, significant investment of providers' time, high commitment demand from clients, difficulty finding adequate technical staff, and

Case Study: Bangladesh Provides Innovative Ways to Deliver FP/MNCH Services to Women (Routh 2001; Routh 2000)

For over two decades, Bangladesh had implemented a door-to-door MCH-FP service delivery package to married women of reproductive age, which included bimonthly home-visits by female fieldworkers distributing contraceptives and information on MCH-FP counseling. Although the program has been successful in improving contraceptive prevalence rates and immunization coverage, among other things, increasing resource constraints required the exploration of alternative strategies. This non-randomized trial evaluated two different point-of-service delivery packages compared to standard care. In strategy 1, community-based sites (schools and clubs) became the central point for female fieldworkers to dispense contraceptive commodities and MCH-FP counseling to women once a week. In strategy 2, services were provided at a fixed-site (primary health care clinic), and included FP, ANC, postnatal care, and sick child and mother care. This enhanced service delivery package was carried out by three clinic staff daily, plus a doctor 3 days a week. As a way to motivate non-users, both interventions (community- and fixed-site) also conducted home visits. The control group consisted of national standard services offered door-to-door, and women who desired FP were referred to clinical services. Contraceptive use increased slightly in both community- and fixed-sites but remained the same in the door-to-door delivery group. Average daily attendance at fixed-site clinics improved with the greatest increase at the primary health care clinic. However, it was not determined if any of these increases were statistically significant. The fixed-site strategy was more cost-effective than the other strategies, as measured by costs associated with number of births averted and QALYs gained. Costs of services were much lower in the fixed-site strategy than those in the other two strategies. Quality-wise, clinics provided a more holistic approach to addressing clients' needs in comparison to the community-based sites and door-to-door delivery method. However, alternative sources of contraceptives (e.g., pharmacies and shops) proved to be a deterrent for women in attending community-based sites. The authors concluded that replacement of the doorstep distribution strategy with the clinic-based strategy is feasible and cost-effective in urban areas without compromising the MCH-FP program performance.

3.6.2. Post-abortion care and family planning services

Studies	10 peer-reviewed studies (Billings 2003, Cissé 2004, David 2007, Delvaux 2008, Fullerton 2003, Johnson 2002, Mahomed 1997, Nobili 2007, Solo 1999, Zhu 2009)	
Locations	1 in Italy 1 in Russia 1 in Mexico 1 in China 1 in Cambodia	2 in Zimbabwe 1 in Kenya 1 in Ghana 1 in Senegal
Interventions	<ul style="list-style-type: none"> All interventions integrated some form of family planning counseling and education to women receiving post-abortion care and took place at health care delivery points such as hospitals and clinics. FP services were provided in a variety of forms, including pre- and post-abortion individual and group counseling sessions, contraceptive service provision, and referrals for further FP education and/or commodities. Other components of the interventions included manual vacuum aspiration (MVA) training for providers, pain management for post-abortion care, comprehensive reproductive health care, STI prevention and management, male involvement in counseling, patient-centered care, media campaigns, supervision of clinic staff, and quality control in clinics. Only one intervention included additional MNCHN services other than post-abortion care. 	
Study Designs	2 randomized controlled trials 2 non-randomized trials 1 before-after	1 case-control 3 serial cross-sectional 1 cross-sectional with control group
Reported Outcomes	<p><u>Health outcomes:</u> Morbidity, unplanned pregnancy, abortion, infant/child growth</p> <p><u>Behavioral outcomes:</u> Condom use, family planning use</p> <p><u>Process outcomes:</u> Unmet FP need, use of MNCHN or FP services, quality of services, cost/cost-effectiveness</p>	
Findings	<p>Coverage</p> <ul style="list-style-type: none"> No studies reported coverage of MNCHN or FP services. <p>Quality of care</p> <ul style="list-style-type: none"> Integrated services resulted in improved quality of care among five of six studies which measured it. <p>Use of MNCHN and FP services</p> <ul style="list-style-type: none"> Four studies reported a positive effect on use of MNCHN and FP services. <p>Cost</p> <ul style="list-style-type: none"> The only study reporting cost found that the intervention resulted in a decreased cost per visit after the intervention (6,500 CFA Francs) compared to before the intervention (10,000 CFA Francs). <p>Effectiveness</p> <ul style="list-style-type: none"> Integrated services consistently resulted in increased uptake and use of family planning methods, with the exception of two studies which found mixed effects. The three studies that measured effects of the interventions on unplanned pregnancies or abortions found mixed results. No studies reported mortality, breastfeeding, vaccinations, attended or safe deliveries, or stigma. <p>Rigor</p> <ul style="list-style-type: none"> The rigor of the included studies was generally quite low. Out of a possible 9 points, seven of the 10 studies had a rigor score of 1 or 2; two had a score of 	

5; and one had a score of 7. Only two of the studies used a randomized controlled trial design.

Promoting and inhibiting factors

- A number of factors that promoted the success of integrated services were mentioned, including free provision of contraceptives, patient-centered model of care, culturally appropriate services, onsite availability of FP services, timing of FP services (before and immediately after abortion), male involvement, and availability of resources and equipment and provider training.
- A number of inhibiting factors were mentioned as well, including staffing problems (high turnover, high workload, lack of supervision and continuing education, and stigma toward women perceived to have had an abortion); high cost of services to both clients and clinics; cost and logistics of contraceptive commodities; and limited client follow-up to sustain contraceptive use.

Case Study: Kenya's various integration models of post-abortion family planning services (Solo 1999)

This non-randomized trial aimed to test and compare the feasibility and acceptability of three PAC-FP integration models in six Kenyan Ministry of Health hospitals. In all settings, the MCH-FP clinics were on-site but were generally distant from the gynecological wards, and no formal linkages existed between the two units. Hence, the goal was to make post-abortion family planning services more accessible to women immediately after treatment and before discharge from the hospital. In Model 1, FP services were provided on the gynecological ward by ward staff (the same provider was responsible for all aspects of a patient's management). In Model 2, FP services were provided on the gynecological ward by staff from the MCH-FP clinic. In Model 3, FP services were provided in the MCH-FP clinic by staff from the MCH-FP clinic. This study was limited both by the low rigor score (2 out of a possible 9 points) and the lack of pre- and post-intervention data provided in order to compare the three models. However, it was shown that, after the intervention, the proportion of women who received FP counseling was higher in Model 1 (92%) compared to Models 2 (62%) and 3 (54%). Furthermore, the proportion of women who left the hospital with a contraceptive method was higher in Model 1 (82%) compared to Models 2 (63%) and 3 (75%). Overall, the authors concluded that Model 1 was the easiest to set up and had the greatest effect on increasing uptake of FP counseling and contraceptive methods. However, important considerations for this model included adequate staffing, availability of private space for counseling and space for FP commodity storage, and the ability to keep a sufficient supply of contraceptives.

3.6.3. Intrapartum/childbirth services and family planning services

Studies	3 peer-reviewed studies (Paxman 2005, Vernon 1993, Matlab articles)	
Locations	1 in Honduras	1 in Bangladesh 1 in India
Interventions	<ul style="list-style-type: none"> All three interventions integrated several MNCHN interventions, including intrapartum and childbirth services, with FP education, counseling, and service provision. The INOPAL study was a client-oriented reproductive health program in Honduras that integrated FP services into prenatal, delivery and postnatal hospital services. The package of services included prenatal education, individual counseling on FP and reproductive health, a variety of contraceptive commodities, a postpartum outpatient clinic for mothers and newborns, and a perinatal information system for improved data collection. The MCH-FP project was a community-based reproductive health program in the Matlab district of Bangladesh that was evaluated over many years. Initially, the program offered basic MCH services, including distribution of safe delivery kits and FP, through household outreach. In 1996, four health centers were established to provide basic emergency obstetric care. The India Local Initiatives Program sought to fill in the gaps in government services using community health workers to bring health and FP information, antenatal and postnatal care, and immunization services to the community. 	
Study Designs	2 serial cross-sectional	1 multiple evaluations, all cross-sectional or serial cross-sectional
Reported Outcomes	<p><u>Health outcomes:</u> Mortality, infant/child growth</p> <p><u>Behavioral outcomes:</u> Family planning use</p> <p><u>Process outcomes:</u> Attended or safe deliveries, vaccination coverage, use of MNCHN or FP services, quality of services, cost/cost-effectiveness</p>	
Findings	<p>Coverage</p> <ul style="list-style-type: none"> One of the three studies reported on coverage of MNCHN or FP services. It found that vaccination coverage increased as a result of the integrated intervention. <p>Quality of care</p> <ul style="list-style-type: none"> Two studies measured changes in quality of care, and both found an improvement in quality as a result of the intervention. <p>Use of MNCHN and FP services</p> <ul style="list-style-type: none"> All three studies measured use of MNCHN and FP services, and all three found that service use had improved. <p>Cost</p> <ul style="list-style-type: none"> Two of the studies measured cost, and both found the integrated intervention to be more cost-effective. <p>Effectiveness</p> <ul style="list-style-type: none"> All three studies measured family planning use, and all three found it to increase as a result of the integrated intervention. Only one study measured mortality and infant/child growth; it found mixed or no effect for both outcomes. None of the studies reported on morbidity, pregnancy, abortion, condom use, breastfeeding, unmet FP need, or stigma. <p>Rigor</p> <ul style="list-style-type: none"> The average rigor score of the three studies was quite low at 1.6 out of nine. 	

Promoting and inhibiting factors

- Several factors were mentioned that promoted the success of the integrated services, including strong internal communication among staff, commitment of volunteers, flexibility to change services to better meet client needs, strong oversight, monitoring progress, ability for community health workers to identify and refer pregnant women with complications, and the cost-effective delivery of more services.
- Several inhibiting factors were also mentioned, including adequate staffing, operational challenges in coordinating mother/baby visits, the high cost of implementation, time-consuming data collection, possible lack of sustainability, and the need for well-functioning higher levels of the health care system for successful community-level interventions.
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Case Study: Bangladesh Implements Integrated MCH and FP Services, Including Safe Deliveries and Referral for Complications During Delivery (Matlab articles: Chaudhuri 2008, Fauveau 1990, Hale 2006, Maine 1996, Ronsmans 1997, Simmons 1991)

Beginning in 1977, Bangladesh implemented a family planning program within Matlab district. MCH services were added in the 1980s, and the program came to be known as the Maternal Child Health Family Planning (MCH-FP) project. The program consisted of FP services, tetanus immunization during pregnancy (and later for all married women), iron/folic acid supplementation during pregnancy and lactation, distribution of safe delivery kits, and care of simple ailments during pregnancy. In each village within Matlab district, a female community health worker visited each household biweekly and then monthly with a male health assistant. In 1996, four health centers were established to provide basic emergency obstetric care for the catchment area and were staffed by a trained nurse-midwife and a paramedic who provided antenatal care, treatment of minor pregnancy and delivery complications, conducted normal deliveries, and referred serious cases to a hospital. Although some mortality evaluation data did not show an effect of the intervention, there appeared to be a sustained decrease in perinatal mortality and direct obstetric deaths in Matlab district compared to the comparison area. Furthermore, children under the age of 5 living in Matlab district were healthier (measured by height-for-age) than children living in the comparison area, although this difference was statistically significant for girls and not boys. Contraceptive prevalence rates showed greater improvement over 10 years time in Matlab district (from 3.0 to 44.1) compared to the control area (3.0 to 11.6), though statistical significance was not reported. The MCH-FP intervention was more cost-effective than the control area, measured by cost per birth averted, though average cost was higher in the former. A key factor that helped decrease mortality was the health care workers' ability to identify and refer serious cases. In addition, the intervention delivered approximately three times more services per eligible woman than in the comparison area at the same cost per woman. The contribution of the community-level intervention to reducing maternal mortality depended on the functioning of higher levels of the health system. However, mortality dropped over time in both the intervention and comparison areas, most likely due to spillover and provision of government and NGO services in the comparison area. Although no difference in

maternal mortality was found, there have been lower rates of fertility in the Matlab area as a result of 20 years of FP services.

3.6.4. Postnatal care and family planning services

Studies	11 peer-reviewed studies (Agha 2007, Alvarado 1999, Barnet 2007, Bashour 2008, Bolam 1998, Bossyns 2002, Paxman 2005, Quinlivan 2003, Routh 2001, Vernon 1993, Warren 2010)	
Locations	1 in Chile 1 in Honduras 2 in Nepal 1 in Bangladesh 1 in India	1 in Syria 1 in Kenya 1 in Niger 1 in the USA 1 in Australia
Interventions	<ul style="list-style-type: none"> In general interventions in this row consisted of three types: 1) home visits with new mothers and their infants to provide post-natal care and education, including FP education and/or provision (n=7); 2) re-training of healthcare workers to offer both post-natal care and FP in their clinics and hospital settings (n=3); and 3) education about FP given to new mothers (n=1). Seven out of 11 studies included contraceptive commodity provision. Nine studies simultaneously integrated MNCHN and FP services integration, while two studies added FP to existing MNCHN services. Studies in this group provided very comprehensive services with all but one study providing services integrated with multiple types of MNCHN services from different rows in the matrix. 	
Study Designs	4 randomized controlled trials 3 non-randomized trials	5 serial cross-sectional
Reported Outcomes	<p><u>Health outcomes:</u> Maternal morbidity and mortality, infant morbidity and mortality, repeat and unintended pregnancy, infant/child growth</p> <p><u>Behavioral outcomes:</u> Family planning use, breastfeeding</p> <p><u>Process data/outcomes:</u> Use of FP or MNCHN services, quality of care of services, cost or cost-effectiveness, vaccination coverage</p>	
Findings	<p>Coverage</p> <ul style="list-style-type: none"> Two of the studies reported on vaccination coverage; one found an increase in coverage, whereas the other found no effect. No studies reported on coverage of other types of MNCHN or FP services. <p>Quality of care</p> <ul style="list-style-type: none"> Integrated services resulted in improved quality of care in six of eight studies that measured it, and no effect in the other two studies. <p>Use of MNCHN and FP services</p> <ul style="list-style-type: none"> Of the five studies that reported on use of MNCHN and FP services, four found an increase in use and the other found a mixed effect. <p>Cost</p> <ul style="list-style-type: none"> Only two studies reported on cost. One study found that a clinic-based strategy (PHCC) was more cost-effective than either a community-based strategy or a control group. The cost per birth averted post-intervention was US\$585 in the PHCC group compared to US\$830 in the control group and the cost per QALY gained was US\$491-787 in the PHCC group compared to US\$1,170-1,877 in the control group. The other study found that the average cost per service declined from US\$4.12 to US\$2.54 over three years of integrated services. <p>Effectiveness</p> <ul style="list-style-type: none"> Two studies reported on mortality and found no effect of the intervention on infant mortality. Three out of 4 studies that reported on morbidity found positive effects, such 	

as 11 times lower diarrhea for infants in the intervention group 80% lower adverse neonatal outcomes in the intervention group and QALYs gained highest in the intervention group and only one study reporting no effect.

- Of the four studies that reported on pregnancy outcomes, three studies found no effect and one study found the number of births averted was highest in the control group post-intervention.
- Two studies reported on infant growth with one finding that infant weight was 10,093g in the intervention group compared to 918g in the control group while the other study found no effect of the intervention.
- Of the four studies that reported on breastfeeding, 3 found no effect and one found that 74% of the intervention group was still fully breastfeeding at 6 months postpartum compared to 10% of the control group.
- All 11 of the included studies reported on family planning use; 4 studies found no effect of the intervention while 5 studies found positive results.

Rigor

- The rigor of the included studies was generally quite good, and included four randomized control trials. Out of a possible 9 points, the average rigor score for this group of studies was 3.6.

Promoting and inhibiting factors

- Factors promoting integration included informed free choice, coordination of care and increased communication among providers, high staff retention, commitment of volunteers, oversight, monitoring of indicators over time, clients' perceptions that services were valuable, and increased cost-effectiveness.
- Factors inhibiting integration included significant investment in provider time, high levels of coordination required between providers, high demand from clients, need for improved infrastructure to coordinate care and maintain patient records, challenges in changing inherited cultural practices and attitudes, intervention success being dependent on the quality of midwives available for care, possible lack of sustainability and low levels of pre-intervention quality of care.
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Case study: Evaluating the impact of postnatal health education for mothers on infant care using a combined clinic and home visitation approach in Nepal (Bolam 1998)

A randomized control study design was used to evaluate the impact of a one-on-one postnatal education program offered to new mothers attending a maternity hospital in Kathmandu, Nepal with follow-up conducted in the mothers' homes. There were three intervention groups and one control group: the first group received health education at birth and at 3 months follow-up, the second group received health education at birth only, and the third group received health education at 3 months only; the control group did not receive any additional health education. Intervention groups received at least one of two interactive education sessions, conducted by a trained female health educator, midwife or community health worker. These interactive and supportive 20-minute sessions covered exclusive breast feeding, the need for FP, treatment of diarrhea, symptoms of acute respiratory infection in infants, and immunizations. The study found primarily mixed results. Health education given after delivery and three months later did not improve

mothers' knowledge and practices of infant health outcomes. Mothers who received health education at birth were slightly more likely to use contraception at six months after birth compared to mothers who received no health education at birth; however, contraceptive use remained low (< 38%) in all four groups. There were also no significant differences between groups for outcomes of infant feeding, care, or immunization. Authors reported that the short length and frequency of the intervention may have influenced results unfavorably; however, the intervention was designed to make this intervention more practical and sustainable over the long term. They recommend frequently repeated simple messages, suggesting that such interventions in developing countries will need to evaluate the trade-off between efficacy and costs. They also recommended that interventions should take into consideration women's broader context; the extent of their influence in household decision making; childbearing, household, and work responsibilities; and work in the fields—all of which may significantly influence their health care seeking behaviors. Finally, study authors advocated evaluating a combination of antenatal and perinatal education sessions with mothers.

3.6.5. Infant/child services and family planning services

Studies	16 peer-reviewed studies (Alvarado 1999, Amin 2001, Barnet 2007, Bashour 2008, Bolam 1998, Bossyns 2002, Debpuur 2002, Douthwaite 2005, Huntington 1994, Murray 1990, Paxman 2005, Quinlivan 2003, Routh 2001, Sathar 2005, Sultan 2002, Vernon 1993)	
Locations	<ul style="list-style-type: none"> 1 in Chile 1 in Honduras 1 in Syria 1 in Kenya 1 in Niger 1 in Ghana 1 in Togo 	<ul style="list-style-type: none"> 3 in Pakistan 2 in Bangladesh 1 in India 1 in Nepal 1 in USA 1 in Australia
Interventions	<ul style="list-style-type: none"> • All interventions integrated some form of infant/child care services (e.g. treatment of childhood illnesses, basic preventive care, immunizations) with family planning education and counseling. • Some interventions also offered antenatal and postpartum care, nutrition counseling, emotional support and counseling for new mothers on caring for themselves and their children, and education about early child development. • Nine studies included provision of non-clinical contraceptive methods. • Most studies emphasized training for providers (e.g., physicians, nurses, community health workers, nurse midwives, health educators). • Two studies included specific efforts to engage with community members and important stakeholders to mobilize community support for improving family planning and overall community health. • Ten studies were conducted in clinic settings; four of these included home visits by trained staff to encourage contraceptive continuation. • Six studies were conducted exclusively in homes by community health workers/nurse midwives delivering a broad range of services from treating minor childhood illnesses, growth monitoring, encouraging breastfeeding and contraceptive use, health promotion, antenatal and postnatal care, and providing non-clinical contraceptive methods. • Nine of the interventions simultaneously integrated MNCHN and FP services; five studies added FP services to existing MNCHN services; and two studies used dual strategies of delivering MNCHN and FP services, including both simultaneous provision of MNCHN and FP services and adding FP services to existing MNCHN services. 	
Study Designs	5 randomized controlled trials 3 non-randomized trials	5 serial cross-sectional 3 cross-sectional
Reported Outcomes	<p><u>Health outcomes:</u> Mortality, morbidity, pregnancy, infant/child growth</p> <p><u>Behavioral outcomes:</u> Condom use, family planning use, breastfeeding</p> <p><u>Process outcomes:</u> Vaccinations, attended or safe deliveries, use of MNCHN or FP services, coverage of MNCHN or FP services, quality of services, cost/cost-effectiveness</p>	
Findings	<p>Coverage</p> <ul style="list-style-type: none"> • Three studies reported on vaccination coverage, only one of which found an increase in coverage as a result of the intervention. The other two both found mixed or no effect. One of the three studies also reported on coverage of primary care services and found an increase. <p>Quality of care</p> <ul style="list-style-type: none"> • Five of seven studies that reported on quality of care found that quality improved as a result of the intervention. Quality was measured in various ways. For example, in one study the number of women who received information about how their chosen method of contraception worked went from 53% to 84% over 10 months. <p>Use of MNCHN and FP services</p>	

- Three studies reported a positive effect on use of MNCHN and FP services. One study reported a greater number of infant visits first –year postpartum in the intervention group (mean = 7.5) compared to the control group (mean = 5.3); this positive effect was also recorded at both 6-month (93% vs. 88%) and 12-month (92% vs. 72%) infant follow-up sessions.

Cost

- Two studies reported cost. One study found that one intervention arm—a fixed public health clinic—was most cost-effective, resulting in a lower cost per birth averted (585 Taka per birth averted; 1USD=45 Taka) as compared to other intervention (1761 Taka) and control (830 Taka) arms. The other study found that the average cost per service declined from US\$4.12 to US\$2.54 over three years of integrated services.

Effectiveness

- Eleven out of the 14 studies that measured intervention effects on family planning use reported positive results and reported an increase in family planning use among intervention groups as compared to control groups or post-intervention compared to pre-intervention, although this difference was not always statistically significant. Among the remaining three studies, two reported no effects and one had mixed results.
- Integrated services resulted in fewer pregnancies or repeat births among three of the four studies that measured it.
- Among the four studies that measured breastfeeding duration, two reported positive results, and two reported no effect.
- Three studies measured indicators of infant growth, and two among these reported positive results of integrated services on infant growth.
- No studies reported abortion, unmet FP need, or stigma as outcomes.

Rigor

- The rigor of the included studies was mixed. Out of a score of 9 points, six studies had a low score of 1-3; eight studies had a medium rigor score of 4-6; and two studies had a high score of 7 or above.

Promoting and inhibiting factors

- A number of factors promoting the success of integrated services were reported, including coordination and communication between different services providers, linkages with the community, male involvement, high staff retention, provider training, community-based distribution of services, home visits by providers, patient-centered model of care, simple health education and referral messages, provision of integrated services at a single location, and availability of resources, equipment and provider training.
- A number of factors inhibiting the success of integrated services were also mentioned. These include political instability, funding shortages, complex intervention designs requiring high commitment from clients, barriers to accessing care, cultural norms regarding gender, childbearing and fertility, poor quality provider training, lack of coordination among providers, hostility among providers to change their practices, and costs and logistics.
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Case Study: Evaluation of Two Distinct Community-based Approaches to MCH-FP delivery – The Navrongo Project in Ghana (Debpuur 2002; Pence 2007)

The Navrongo Community Health and Family Planning project, a high quality randomized controlled trial, was conducted in 1994 in the Navrongo Region of northern Ghana. This project employed two distinct community-based approaches to the delivery

of FP and basic primary care in addition to standard Ministry of Health clinic-based services. The intervention had four arms. (1) Nurse outreach: Community health nurses were trained to offer doorstep services including treatment of childhood illnesses, immunizations, and provision of non-clinical FP methods (oral contraceptives, condoms and injectables). (2) Zurugelu: Traditional social cooperation (“zurugelu”) was used to mobilize support for community health and FP services. Health-care action committees were formed with councils of village elders, mobilizing traditional peer networks. Community health volunteers provided basic health care, reproductive health education, outreach to men, and non-clinical contraceptives. (3) A combined nurse outreach and zurugelu approach. (4) A control arm consisting of the existing clinic-based MOH services. Both delivery approaches (study arms 1 and 2) had positive effects, while the combined approach (arm 3) was more effective across select outcomes. The unadjusted fertility decreased in all three intervention arms. Both the nurse outreach and the zurugelu intervention significantly reduced parity progression relative to the comparison area in every year. The combined approach was greater than each approach separately, demonstrating that each arm has an additive effect on fertility reduction. Moreover, the combined approach was associated with consistently higher levels of modern contraceptive use for the first three years, but there was no apparent effect in the fourth year and no effect if the two approaches were implemented independently. The overall contraceptive prevalence, however, was still quite low at the end of four years of study exposure suggesting that factors external to the intervention were affecting fertility. In terms of intervention effects on child mortality, the results varied by study arm. The nurse outreach approach resulted in a decrease in under-five, early child, and infant mortality, while both the zurugelu and combined approach resulted in an increase in child mortality in all age groups. Authors felt the presence of outreach workers in the zurugelu and combined approach may have diverted health-seeking behavior away from skilled medical care available in sub-district clinics. This could have been particularly unfavorable for two health conditions, acute respiratory infections and diarrheal disease, common in the second year of life. Mobilization of MOH resources to provide services within the community ensured greater access to FP. Additionally, by engaging with community leaders, including men, the zurugelu approach directly responded to cultural barriers that women face in accessing and utilizing modern contraception. Minor and temporary lapses in project intensity may have influenced the widespread discontinuation of contraceptive methods. The authors conclude that a comprehensive community-mobilization approach to the provision of FP services can have a favorable impact even in a traditional setting that is widely viewed as being incompatible with FP program success.

3.6.6. Maternal and infant nutrition and family planning services

Studies	5 peer-reviewed studies (Alvarado 1999, Amin 2001, Bolam 1998, Vernon 1993, Matlab articles)	
Locations	1 in Chile 1 in Honduras	1 in Nepal 2 in Bangladesh
Interventions	<ul style="list-style-type: none"> All interventions integrated some form of maternal or neonatal/infant child care service, with services to specifically improve neonatal/infant or maternal nutritional status, with family planning education and counseling. The services offered included encouragement of breastfeeding, infant vaccinations, immunizations, and other basic preventative care. Two studies included provision of non-clinical contraceptive methods. Two studies were conducted exclusively in clinic settings. The remaining three studies included home visits and a clinic component. In these three studies, trained community health workers visited women in their homes offering services such as basic prenatal care, immunizations, iron/folic acid nutritional supplementation, distributing safe delivery kits, encouraging breastfeeding and family planning, and providing non-clinical contraceptive methods. In addition, in one study (six peer-reviewed articles report on this study) health centers were established to offer emergency obstetric care, treat minor pregnancy and delivery complications, conduct normal deliveries, and refer cases with serious complications to the hospital. In another study, health education emphasizing breastfeeding was offered at the maternity clinic before discharge, while in the third study after home visits women were encouraged to visit health centers for all essential reproductive, maternal, and child health care needs, nutritional services, and basic curative and preventive care. All five intervention studies simultaneously integrated MNCHN and FP services. 	
Study Designs	1 randomized controlled trial 2 non-randomized trials	1 serial cross-sectional study 1 multiple evaluations (2 cross-sectional and 4 serial cross-sectional)
Reported Outcomes	<p><u>Health outcomes:</u> Mortality, morbidity, pregnancy, infant/child growth</p> <p><u>Behavioral outcomes:</u> Family planning use, breastfeeding</p> <p><u>Process outcomes:</u> Vaccination coverage, attended or safe deliveries, use and coverage of MNCHN or FP services, quality of services, cost/cost-effectiveness</p>	
Findings	<p>Coverage</p> <ul style="list-style-type: none"> Two of the studies reported on vaccination coverage, and both found the integrated intervention had no effect on vaccination coverage. One of the two studies also reported on coverage of primary care services and found an increase. <p>Quality of care</p> <ul style="list-style-type: none"> Two studies reported on the effect of integration on quality of care, and both found that quality improved. <p>Use of MNCHN and FP services</p> <ul style="list-style-type: none"> Four of the five studies measured changes in use of MNCHN and FP services as a result of the integrated intervention, and all four found an increase in use. <p>Cost</p> <ul style="list-style-type: none"> One study reported on cost and showed that the average cost per birth averted in the intervention group was lower and ranged from US\$171-240 compared to US\$220-298 in the control group. <p>Effectiveness</p> <ul style="list-style-type: none"> All five studies measured family planning use with three studies reporting positive results due to the intervention, one study reported no effect and one study reporting mixed effects with family planning use increasing over time in both the intervention and control groups. For the three studies that reported positive outcomes, one study found that family planning use increased from 28% to 53% in the intervention group, another study found 	

family planning use was 35% in the primary intervention group compared to 27% in the control group, and in the other study family planning use increased from 9.2% to 46% over two years.

- For breastfeeding, one study found no effects of the intervention and the other study found positive results with 74% of the intervention group still fully breastfeeding at six months postpartum compared to 10% of the control group.
- Two of three studies measuring infant growth reported no effect of the intervention on infant growth (height and weight for age) while one study reported positive effects, finding that infant weight was 10,093g in the intervention group compared to 918g in the control group.
- Among the three studies that measured the effects of integrated services on infant mortality, one reported a significant difference between the intervention and control arms with mortality rates being significantly lower in the intervention arms; while the other two studies found no effect.
- Two peer-reviewed articles reporting on the same study measured the effects of integrated services on maternal mortality, but only one of these found results and reported a significant reduction in maternal mortality rates coupled with significantly higher utilization of maternity clinics for assisted delivery in the intervention arm as compared to the control arm.
- No studies reported on abortion, condom use, unmet FP need, or stigma.

Rigor

- The rigor score of these included studies was generally low. Out of a possible score of 9, three studies had a low score of 1-3, and two studies had a medium score of 4-6.

Promoting and inhibiting factors

- A number of factors promoting the success of integrated services were reported, including coordination and communication between different service providers, linkages with the community, community-based distribution of services, patient-centered model of care, reduction in costs to clients, and availability of resources, equipment, and provider training.
- A number of factors inhibiting the success of integrated services were also mentioned. These include training programs that were time intensive and hence limited provider participation, short duration of interventions, provider unwillingness to change practices and coordinate amongst each other, infrastructural costs and challenges, lack of an efficient referral system, as well as inefficiencies at higher health system levels.

Case Study: A Clinic in Chile Has Mixed Results Implementing Comprehensive Services, Including Breastfeeding and Maternal and Infant Nutrition (Alvarado 1999)

Consultorio San Luis de Huechuraba (CSLH), a non-government clinic in a poor neighborhood in Santiago, provided integrated FP and maternal and infant care. The intervention had been proven efficacious elsewhere, so the objective of CSLH was to evaluate it in an area of extreme poverty. All four providers were trained in breastfeeding and contraceptive management and worked as a team to provide care to mothers and infants. Two were community health workers who conducted home visits during pregnancy and visits to the maternity wards. They were trained in pregnancy care, FP, prevention of STDs/HIV, breastfeeding, infant care, and maternal and infant nutrition. Mothers and infants were seen during the same visits every 10 days in the first month postpartum and at monthly intervals thereafter for the first year. The intervention was evaluated by comparing it to a public clinic in a similar neighborhood nearby. Outcomes

of the evaluation were mixed, with no effect on contraceptive uptake and unintended pregnancies, and positive results for breastfeeding, infant growth, and uptake and quality of services. Contraceptive acceptance was similar among clients attending both clinics, but methods chosen differed, as did contraceptive discontinuation. Number of unintended pregnancies was higher among the CSLH clinic clients, although this difference was not statistically significant. Breastfeeding rates and infant growth were significantly better among women attending CSLH compared to women at the control clinic, and infant morbidity rates were lower. All method acceptors attended the CSLH until the end of the year, whereas 21% of those attending the public clinic were considered lost to follow-up. Clients at CSLH reported feeling supported in choosing from a variety of available contraceptives free of charge, and care among providers was coordinated. Although the intervention clients spent more time at CSLH because of the greater number of scheduled visits, they felt the time was well-spent, and they felt empowered in their choices. However, the intervention required significant investment in provider time and a high level of commitment from clients. The study authors concluded that this type of program could be built into the national program to improve maternal and child health outcomes.

3.7. Analysis of randomized controlled trials

A separate analysis was conducted of those interventions that were evaluated by the most rigorous study design, a randomized control trial.

Studies	7 peer-reviewed studies (Barnet 2007, Bashour 2008, Bolam 1998, Debpuur 2002, Nobili 2007, Quinlivan 2003, Zhu 2009)	
Locations	I in USA I in Italy I in Australia	I in Syria I in Nepal I in Ghana I in China
Interventions	<ul style="list-style-type: none"> ▪ Four studies focused on home visits with new mothers and their infants, providing post-natal care and education, including FP education and/or provision. ▪ Two studies focused on women in post-abortion care settings receiving FP at the clinic compared to referring them to other sites for FP services. ▪ One study focused on nurse and community outreach providing post-natal care and education, including FP education and provision. ▪ Three studies were conducted in participant homes and four studies were conducted in hospital or clinical settings. ▪ Only two of the 7 studies included provision of FP commodities. 	
Reported Outcomes	<p><u>Health outcomes:</u> Infant mortality; infant and maternal morbidity; pregnancy; unplanned pregnancy; infant/child growth</p> <p><u>Behavioral outcomes:</u> Family planning use; condom use; induced abortion; breastfeeding</p> <p><u>Process data/outcomes:</u> Vaccination coverage; quality of services</p>	
Findings	<p>Coverage</p> <ul style="list-style-type: none"> • Only one study reported in changes in coverage of MNCHN-FP services. It found that vaccination coverage did not change as a result of integration. <p>Quality of care</p> <ul style="list-style-type: none"> ▪ Two of the seven studies reported on quality of services; neither study reported an effect on quality of services due to the intervention. <p>Use of MNCHN and FP services</p> <ul style="list-style-type: none"> ○ No studies reported on use of MNCHN and FP services. <p>Cost</p> <ul style="list-style-type: none"> ▪ No studies reported on cost or cost-effectiveness. <p>Effectiveness</p> <ul style="list-style-type: none"> ▪ Three studies reported on infant mortality and found no effect of the intervention on this outcome. ▪ Two studies reported on morbidity; one study found a positive effect on infant morbidity (80% lower adverse neonatal outcomes in the intervention group) and one study reported no effect on various maternal morbidity outcomes. ▪ All 7 of the included studies reported on family planning use; four studies found no effect due to the intervention. Of the three that found an effect, one study found that those in the intervention group were 1.35 (p=0.007) times more likely to use reliable contraception at 6 months postpartum, another study found family planning use was 35% in the primary intervention group compared to 27% in the control group, and in the final study 80% of those in the intervention group reported using contraceptives at follow-up compared to 38% in the control group. ▪ No studies reported on STI incidence, unmet FP need, attended or safe deliveries or stigma. <p>Rigor</p> <ul style="list-style-type: none"> ▪ The rigor score of the 7 included RCTs was high. Out of a possible score of 9, the average score was 6.3 (range 5-8). <p>Promoting and inhibiting factors</p> <ul style="list-style-type: none"> ▪ Promoting factors included: staff retention, high community involvement, personality of the midwives involved in the intervention and their ability to help mothers coordinate 	

	<p>care more effectively during home visits, mobilization of clinics to the community level, using a patient-centered model, the provision of FP methods free of charge, and face-to-face interactions.</p> <ul style="list-style-type: none"><li data-bbox="456 285 1461 470">▪ Inhibiting factors included: results from home visits were not always communicated to the primary care provider, interventions short in length not able to have optimal impact, lack of sustainability of interventions, necessity of having midwives who are from the local community, difficulty in working with inherited practices and attitudes, many challenges related to promoting continued breastfeeding, overwhelmed staff workloads, and lack of male partner involvement.
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3.8. Analysis of co-located vs. referral services

A separate analysis was conducted of studies that specifically compared services that were offered in the same place and services that referred clients to another location for certain services. The studies below all had at least two arms, one with co-located services and one with clients referred elsewhere for certain services.

Studies	4 peer-reviewed studies (Nobili 2007, Routh 2001, Solo 1999, Zhu 2009)	
Locations	I in Italy I in Bangladesh	I in China I in Kenya
Interventions	<ul style="list-style-type: none"> ▪ All studies analyzed interventions that compared co-located services (i.e. provision of MNCHN and FP services by the same provider or in the same location) with referral services services (i.e. referring patients to another location for FP services). ▪ Four studies met inclusion criteria (three are PAC-FP integration studies); all of these studies reported outcomes comparing the co-located vs. referral services. (One study in Nepal compared co-located vs. referral services but did not report outcomes comparing co-located vs. referral services.) 	
Reported Outcomes	<p><u>Health outcomes:</u> Maternal morbidity; pregnancy; unplanned pregnancy</p> <p><u>Behavioral outcomes:</u> Family planning use</p> <p><u>Process data/outcomes:</u> Use of FP or MNCHN services; quality of services; costs</p>	
Findings	<p>Coverage</p> <ul style="list-style-type: none"> ○ No studies reported on coverage of MNCHN or FP services. <p>Quality of care</p> <ul style="list-style-type: none"> ○ No studies reported on quality of care. <p>Use of MNCHN and FP services</p> <ul style="list-style-type: none"> ○ Two studies reported on use of MNCHN and FP services; one found an increase in use of MNCHN and FP services as a result of co-located services, whereas the other found mixed effects. <p>Cost</p> <ul style="list-style-type: none"> ○ Only one study reported on cost, and found that although co-located services were more cost-effective they also required higher upfront costs. <p>Effectiveness</p> <ul style="list-style-type: none"> ▪ All four studies reported on family planning use. Two studies reported that family planning use was higher for co-located services compared to referral services. The other two studies found mixed outcomes due to co-located services. ▪ Only two of the studies reported on any other health or behavioral outcomes. One found that unplanned pregnancies and abortions did not change due to co-located services, but that condom use increased. The other found that morbidity decreased as a result of co-located services but that there was a mixed effect on pregnancy outcomes. <p>Rigor</p> <ul style="list-style-type: none"> ○ The average rigor score was 4.5 out of nine (range: 2-7). <p>Promoting and inhibiting factors</p> <ul style="list-style-type: none"> ▪ Promoting factors included: a culturally appropriate and patient-centered model of care, timing of the FP intervention (before termination of pregnancy), provider acceptance of new staffing and responsibilities, existing onsite availability of FP resources and free contraceptives, male partner involvement, and having a multi-component intervention. ▪ Inhibiting factors included: lack of sustainability, lack of coordination between units and poor patient flow, high cost of provider training and high staff workload, and cultural limitations around male involvement. 	

3.9. Summary of unpublished studies

Unpublished studies were reviewed separately from those published in the peer-reviewed literature. The studies were divided into two groups based on the type of MNCHN services integrated with FP services: post-abortion care (11 studies), or other MNCHN services (10 studies). The cities and countries, intervention descriptions, and key outcomes reported are briefly described in Table 7.

Table 7. Unpublished studies

First author, year	City, Country	Brief description of the intervention	Key outcomes measured pre/post or multi-arm
Unpublished studies reporting on Post-abortion care and FP services (11 studies)			
Benson, 2002	Lima, Peru	Improvement of the quality of care of PAC services at a tertiary care hospital. Intervention included: training of staff involved in PAC service delivery; switch from sharp curettage to MVA and from inpatient to outpatient service; provision of contraceptives and FP information. This is a follow-up study to determine sustainability of the program.	Provision of FP and medical care information Family planning use Length of hospital stay
Billings, 2003	La Paz, Santa Cruz, and Sucre, Bolivia	Free post-abortion care in three hospitals, aiming to increase women's access to services, reduce the cost of delivery and length of hospital stay, and improve quality of care. The interventions consisted of re-organization of services, PAC training and refresher training, and supportive supervision.	Quality of services (eg. informing women of their health status) Unmet FP need Family planning use Pregnancy Cost of services
Billings, 2007	Bolivia, Guatemala, Honduras, Mexico, Nicaragua, Peru, Dominican Republic	A collection of multiple reports from the countries listed all focused on providing post-abortion care in a hospital setting. All interventions contained on three main components: 1) rapid treatment of complications due to an unsafe or spontaneous abortion; 2) contraceptive provision to help meet women's contraceptive needs and help avoid repeated abortions; and 3) provision of additional reproductive health services needed as a result of abortion complications either onsite or via referral.	Use of FP or MNCHN services Quality of FP or MNCHN services Family planning use Cost
McCarragher, 2007	Santo Domingo and La Romana, Dominican Republic	An intervention to improve the quality of post-abortion care for adolescents was implemented in four public hospitals. The intervention consisted of provider training, youth friendly materials, and FP counseling and methods.	Family planning use Receipt of counseling on pregnancy risk post-abortion complications and

First author, year	City, Country	Brief description of the intervention	Key outcomes measured pre/post or multi-arm
			HIV/STI
Medina, 2001	Honduras	Improvement of post-partum and post-abortion care FP services in five hospitals. Intervention included staff training, equipment provision, clinical and educational materials, and quarterly meetings to analyze achievements and plan new activities.	Receipt of information about contraceptive methods Clients being offered a contraceptive method Family planning use Unmet need for FP
Savelieva, 2003	Perm, Russia	Two models of post-abortion care service improvement were compared at five health care facilities. Model I consisted of training providers in FP counseling and interpersonal communication skills, and provider job aids and client-education materials. Model II consisted of Model I activities as well as free initial supply of contraceptives to clients.	Family planning use Repeat abortion Cost to client of contraceptive methods vs. abortion
Tesfaye, 2006	Addis Ababa, Amhara and Oromia regions, Ethiopia	The intervention was conducted at 42 facilities in three regions in Ethiopia, and included: provider training, MVA equipment, pain management, counseling, FP and referral for FP, and training of community health workers.	Quality of services (e.g. availability of contraceptives, MVA and antibiotics)
Thiam, 2006	Senegal (23 districts)	An intervention was implemented to scale up the availability of PAC in health centers and health posts.	Use of PAC services Provision of counseling to clients Family planning use
Wanjiru, 2007	Mwanza province, Tanzania	An intervention to decentralize the management of post-abortion care from district hospitals to 11 primary health care facilities. The intervention consisted of introduction of the PAC model, and community education and mobilizations.	Uxe of PAC services Receiving counseling on FP Family planning use Program cost Cost to clients
Wickstrom, 2008	Nakuru, Kenya	Community mobilization for post-abortion care to improve community participation and increase access to reproductive health and FP services, especially PAC.	Family planning use and continuation
Youssef, 2007	Fayoum and Beni Suef	Comparison of two models of post-abortion care in six hospitals. Model I consisted of training of	Client receipt of FP counseling

First author, year	City, Country	Brief description of the intervention	Key outcomes measured pre/post or multi-arm
	governorates, Egypt	providers on MVA, pain control, and post-abortion FP counseling and referral. Clients were given a post-abortion brochure. Model II consisted of Model I for three months, followed by re-organization of care in order to offer FP on the ob/gyn ward.	Referral to FP clinic
Unpublished studies reporting on other MNCHN and FP services (10 studies)			
Abdel-Tawab, 2008	Assiut and Sohag, Upper Egypt	Six districts randomized to receive one of 2 models of dissemination of birth spacing messages. For Model I (health services model), birth spacing messages were communicated through services by health workers to women during prenatal and postpartum periods. Model II (community awareness model), provided this service plus an awareness raising component that targeted men through training community influentials to communicate messages.	Use of FP or MNCHN services
Cappa, 2007	16 regions of the Russian Federation	Comprehensive maternity and infant care program integrating FP. The program helped regional and municipal government-supported health facilities adopt internationally recognized, client-centered, evidence-based maternal and child health standards and practices in multiple areas: antenatal care; family-centered maternity care; essential newborn care; exclusive breastfeeding; and family planning counseling and services, especially for postpartum and post-abortion clients.	Unplanned pregnancy Quality of FP or MNCHN services Coverage of FP or MNCHN services
Jacobs, 2002	Multiple regions in Guatemala	Aimed to provide comprehensive care to mothers and children during the first year postpartum, to train physicians, nurses, auxiliary nurses and social workers in its use, and to develop and test strategies and materials for training community health agents to promote services for new mothers during the first year postpartum. It also collected data to establish if these strategies were effective in improving the quality and comprehensiveness of the care received by mothers and children less than one year of age.	Use of FP or MNCHN services Family planning use
Lynam, 1994	Kenya (city/district not given)	Using the COPE exercise, Engender Health together with the Kenya MoH and Christian Health Association of Kenya (CHAK) identified reasons behind missed opportunities for FP services within health facilities. The partners then developed an action plan to address the issues. The intervention included training providers and staff from MCH clinics (from a government and a	Family planning use (received family planning method before discharge) Unmet FP need (missed opportunities)

First author, year	City, Country	Brief description of the intervention	Key outcomes measured pre/post or multi-arm
		mission hospital) on available FP services and materials, promoting the use of FP I&E within their clinics, and encouraging health workers to be more proactive in asking clients if they need/want FP. The importance of linked services was emphasized. Assessments (client interviews) were conducted immediately post-intervention and 6 months later.	Quality of FP or MNCHN services (received FP I&E)
Mwangi, 2008	Embu district, Kenya	<p>The Postnatal care – family planning (PNC-FP) package increased both the recommended timing and content of PNC services (48 hours post-delivery, 2 weeks-, 6 weeks-, and 6-months checkup at MCH clinic). Intervention was carried out at one hospital and four health centers in the district.</p> <p>The content of each visit is specific to the timing of the visit, such that it would be “focused” postnatal care. Components include: STI screening; maternal health checks; counseling on self care (breast care, clean perineum, maternal nutrition); vitamin A supplementation; newborn checks and counseling on basic newborn care (exclusive breastfeeding, clean cord care, warmth, infant feeding, hygiene, infant growth monitoring and immunization); danger signs for mother and newborn in postnatal period; FP information and services or referral; HIV testing (if status not known); nutritional and other supportive advice for HIV positive women; and ART for HIV positive women and babies; as well follow-up consultations if required.</p> <p>A three-day training was conducted with providers, as well as the use of a new postnatal register. A pre-post intervention evaluation amongst providers and clients was carried out to assess quality of care and uptake of services.</p>	<p>Family planning use</p> <p>Quality of FP or MNCHN services (FP counseling, recommended check-up, provider’s MNCHN knowledge)</p>
Gasco, 2006	Multiple districts throughout Romania	The Romanian Family Health Initiative (RFHI) rapidly expanded access to family planning services and supplies by integrating family planning into primary health care delivery. The program had three components: (1) training rural family health doctors and nurses at primary health care centers in contraceptive technology and client-centered counseling, (2) contraceptive supplies, and (3) demand creation activities.	<p>Mortality</p> <p>Family planning use</p>
Shaheen, 2002	West Bank and Gaza,	The PHP basic service delivery model includes home visits by a CHW to recently delivered	Family planning use

First author, year	City, Country	Brief description of the intervention	Key outcomes measured pre/post or multi-arm
	Palestine	<p>women two-three days after delivery. The study intervention involved adding a second home visit to consenting women of low parity 30-38 days after delivery by the same CHW who conducted the first visit. During the second home visit the CHW reminded the women about their day 40 clinic visit for postpartum care and highlighted the importance and benefits of that visit. The CHW also provided counseling and health education specific to low parity women and their husbands (if available) relating to maternal and child health, contraception, and breast and cervical cancer awareness and prevention. CHWs received training on how to provide counseling and services that are tailored to the needs of low parity women.</p>	Breastfeeding
Varkey, 2004	New Delhi, India	<p>Six dispensaries were chosen as study sites (3 interventions; 3 controls). The study encouraged husbands' participation in their wives ANC and PNC and includes:</p> <ul style="list-style-type: none"> ▪ an individual or group counseling session in the antenatal clinic, separately for men and women ▪ couple counseling sessions during antenatal and postnatal clinics ▪ screening of all pregnant women for syphilis using the RPR test; and ▪ syndromic management of men reporting urethral discharge and men and women reporting genital ulcers as part of the individual counseling. <p>Pre- and post-intervention (at 6 months) assessments were conducted.</p>	<p>Condom use Family planning use Breastfeeding Vaccination coverage for infants and children Quality of FP or MNCHN services (clients' knowledge of dual protection condom use, breastfeeding, and pregnancy danger signs; STI screening; client-provider interaction and satisfaction) Cost</p>
Warren, 2008a	Butha Buthe district, Lesotho	<p>A postpartum package of care with three consultations within 48 hours, one week, and six weeks after delivery was developed to strengthen linkages with existing PMTCT follow-up services and family planning services. A postpartum register was also introduced. Intervention sites include the district hospital and four public health facilities.</p> <p>The postpartum-family planning (PPC-FP) package of care consists of: STI screening, maternal health checks; counseling on self care (breast care, maternal nutrition); vitamin A</p>	<p>Condom use Family planning use Use of FP or MNCHN services (# of women attending postpartum care) Quality of FP or MNCHN services (FP counseling, recommended</p>

First author, year	City, Country	Brief description of the intervention	Key outcomes measured pre/post or multi-arm
		<p>supplementation; newborn checks and counseling on basic newborn care (exclusive breastfeeding, infant feeding, hygiene, infant growth monitoring and immunization); danger signs for mother and newborn in postnatal period; FP information and services or referral; HIV testing (if status not known); nutritional and other supportive advice for HIV positive women; and ART for HIV positive women and babies; as well follow-up consultations if required.</p> <p>A three-day training was conducted with providers. A pre-post intervention evaluation amongst providers and clients was carried out to assess quality of care and uptake of services.</p>	<p>check-up, provider's MNCHN knowledge, infant feeding counseling, client satisfaction)</p>
Warren, 2008b	Manzini and Hhohho regions, Swaziland	<p>Intervention sites: three maternity units and four public health units (PHU) or maternal child health (MCH) clinics.</p> <p>The intervention improves the timing and content of care for both mother and infant: care after birth and pre-discharge, within one week in the MCH clinic, after six weeks in the MCH clinic. The mother and her newborn should be seen by the same health provider and all necessary services should be rendered at the same time (FP, PNC, PMTCT follow up, infant immunizations, and growth monitoring). In each setting, HIV testing and counseling were provided, including partner counseling and testing. For HIV-positive women, providers included information on CTX prophylaxis, infant feeding options, OI information. These women were also asked about the HIV status of their partners. Verification of care and treatment by HIV-positive postpartum women was also conducted.</p>	<p>Breastfeeding Use of FP or MNCHN services (# of women attending PNC, HIV testing, # of partners who underwent HIV testing and shared results) Quality of FP or MNCHN services (all aspects of linked care presented to clients, provider's MNCHN knowledge, provider's MNCHN knowledge with HIV-positive women, HIV testing and counseling, care and support for HIV-positive postpartum women and HIV-exposed infants, FP counseling among postpartum women)</p>

4. Conclusions

4.1. Overall findings

- A total of 36 peer-reviewed articles met the inclusion criteria, and they reported on 29 distinct interventions. Ten were conducted in Sub-Saharan Africa; nine in South Asia; three in Latin America; two in East Asia; and one each in Russia, Syria, Italy, U.S., and Australia.
- Seven studies used a randomized control trial design; most studies used less rigorous designs such as pre-post or cross-sectional with a comparison group. The average rigor score of the studies was 3.2 (range: 1-8).
- Integrating MNCHN and FP services was feasible. Across the variety of integration models, settings, and target populations, most studies reported that integration had a positive impact on reported outcomes; however, many studies also reported mixed effects or no effect on some outcomes. No studies reported negative outcomes due to providing integrated services, although this could be the result of publication bias, as studies are more likely to be published if they have positive results.
- 15 interventions included several MNCHN services; all other interventions offered only one type of MNCHN service.
- Eight interventions offered only FP counseling and education, without FP contraceptive services/commodity provision. Interventions that offered provision of contraceptive commodities in addition to FP counseling and education were more likely to report increased uptake of contraceptives compared to interventions that did not offer contraceptive commodities.
- Most studies that measured use of MNCHN and FP services reported an increase in use due to integration (11 out of 15). Moreover, all but one study that measured the quality of services showed that quality improved after integration (11 out of 12).
- Few studies (4) reported on the cost of providing integrated services, and none of them found integration of services to result in increased costs. Although two studies did find initial costs of services to be higher for the provision of integrated services, over time, and with enhanced capacity utilization, the cost-effectiveness of providing integrated services (as measured by cost per birth averted and/or quality adjusted life years gained) was greater as compared to traditional services.
- An analysis of the four studies that compared co-located and referral services found that co-located services resulted in higher contraceptive and condom use, fewer unplanned pregnancies and induced abortions (though this was not statistically significant), and were more cost-effective (although with higher upfront costs).

4.2. Gaps in the research

Although this review included a large number of studies, it also identified several gaps in the existing evidence.

- Few studies had rigorously designed evaluations. Only seven studies were randomized controlled trials. Many studies were cross-sectional (with a comparison group) or serial cross-sectional designs and had low rigor scores.
- Few studies specifically compared integrated MNCHN and FP services to the same services offered separately.
- Few studies examined family planning services integrated with maternal and infant nutrition services.
- All studies targeted women; only three studies also targeted men even though men in most resource-limited and traditional settings have an influence on fertility decisions and actions. Four studies explicitly recommended greater involvement of men, indentifying the lack of male involvement as a limiting factor in study success.
- Few studies reported on cost data and only one study measured cost-effectiveness, despite the fact that cost-effectiveness remains a key argument in favor of integration. Furthermore, few studies measured coverage of services as an outcome.
- No studies measured changes in the cost to clients, including transportation and time. Few studies asked clients what they wanted or sought to determine how clients make decisions.
- No studies reported negative results of integration. This is likely due to publication bias, as often negative results are not reported. However, much can be learned from integration interventions that fail to achieve desired results, so these studies should be reported widely.
- Few of the studies provided sufficient information about the interventions to allow them to be replicated.
- Few studies sought to scale up a successful integration intervention and measured and compared the success of the intervention across a variety of settings.

4.3. Recommendations for future research

The rigor score criteria used in this review can provide a guide for improving the quality of future evaluations of integrated MNCHN and FP services. Using these techniques will allow a basis of comparison for post-intervention evaluation data and will also reduce bias and confounding. Three techniques offer a basis of comparison: following a cohort of subjects over time; collecting pre-intervention data to compare to post-intervention data; and including a control or a comparison group. A number of techniques can be used to reduce bias and confounding in evaluation studies: randomly assigning participants to the intervention group; randomly selecting subjects, or including all subjects who participated in the intervention, for assessment; retaining as many subjects in the evaluation over time as possible; having comparison groups that are equivalent at baseline on socio-demographic and outcome measures; and using data analytic techniques that control for potential confounders. Although it is not always possible to use all of these techniques, employing as many as feasible will improve the quality of the evaluation and make the results more reliable.

4.4. Strengths and limitations of the review

Strengths

The two main strengths of this review are its broad scope and systematic methodology. We attempted to define and cover the entire field of MNCHN and FP linkages. We also used standard Cochrane methods to systematically review and analyze this body of evidence.

Limitations

The strengths of this review are also its limitations. Because this review was so broad in scope, it was difficult to synthesize data due to the enormous heterogeneity in the types of studies included. The included studies were heterogeneous in terms of their interventions, populations, research questions and objectives, study designs, rigor, and outcomes.

Publication bias is an inevitable limitation of systematic reviews of the literature, as studies with negative findings are less likely to be published. In addition, given the nature of distribution of unpublished reports, our search strategy may not have captured all of them.

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5.2. Bibliography of included studies

Studies included in the review (n=36 articles reporting on 29 interventions) are listed below in two ways. First, they are classified alphabetically. Second, they are classified by matrix cells.

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MF1: Family planning education and counseling and antenatal services

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MF8: Contraceptive service/commodity provision and postnatal care

1. Agha S, Karim AM, Balal A, Sosler S. The impact of a reproductive health franchise on client satisfaction in rural Nepal. *Health Policy and Planning* 2007;22(5):320-328.
2. Alvarado R, Zepeda A, Rivero S, Rico N, Lopez S, Diaz S. Integrated maternal and infant health care in the postpartum period in a poor neighborhood in Santiago, Chile. *Studies in Family Planning* 1999;30(2):133-141.
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4. Paxman, J. M., A. Sayeed, et al. The India Local Initiatives Program: a model for expanding reproductive and child health services. *Stud Fam Plann* 2005;36(3): 203-220.
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MF9: Family planning education and counseling and infant/child services

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MF11: Family planning education and counseling and nutrition services

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MF12: Contraceptive service/commodity provision and nutrition services

1. Alvarado R, Zepeda A, Rivero S, Rico N, Lopez S, Diaz S. Integrated maternal and infant health care in the postpartum period in a poor neighborhood in Santiago, Chile. *Studies in Family Planning* 1999;30(2):133-141.
2. Amin R, St Pierre M, Ahmed A, Haq R. Integration of an essential services package (ESP) in child and reproductive health and family planning with a micro-credit program for poor women: Experience from a pilot project in rural Bangladesh. *World Development* 2001;29(9):1611-1621.
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5.3. Annotated bibliography of included studies

Agha, S., A. M. Karim, et al. (2007). "The impact of a reproductive health franchise on client satisfaction in rural Nepal." Health Policy and Planning **22**(5): 320-328.

This study evaluates the impact of a nurse and paramedic reproductive health franchise in rural Nepal on client satisfaction and utilization of services. A quasi-experimental study design, with baseline and follow-up measurements on nonequivalent control groups, was used to assess the effects of the intervention. The study collected data from exit interviews with male and female clients at clinics and from household interviews with married women. Our assessment covers the project's performance for about a year of actual implementation. Client satisfaction with the quality of services increased across a range of indicators at intervention clinics but not at control clinics. Overall satisfaction with services also increased only at intervention clinics but not at control clinics. Consistent with these changes, loyalty increased among clients of franchised clinics. The analysis showed a positive relationship between client satisfaction and loyalty. Although the project's implementation was examined over a relatively short period of time, there appears to have been a net positive effect of the intervention on obtaining family planning products from medical stores/pharmacies. The study shows that franchising reproductive health services increases a provider's interest in delivering better quality services in rural areas of a developing country.

Alvarado, R., A. Zepeda, et al. (1999). "Integrated maternal and infant health care in the postpartum period in a poor neighborhood in Santiago, Chile." Studies in Family Planning **30**(2): 133-141.

An integrated postpartum health-care program was established by the Consultorio San Luis de Huechuraba (CSLH), a nongovernmental organization in a neighborhood of extreme poverty in Santiago, Chile. The main components were education, maternal and infant health care, support for the mothers, and active participation of women from the community served. The program was evaluated through indicators of contraceptive use, breastfeeding performance infant growth and health, and a qualitative assessment of women's satisfaction. Controls were women of similar characteristics attending the nearby public clinic. Acceptability of contraceptive methods was similar but contraceptive options differed between clinics. The total number of pregnancies and of respondents lost to follow-up was significantly higher for the public clinic than for the CSLH. Breastfeeding duration was significantly longer and infant growth and health were found to be significantly better at the CSLH than at the public clinic. Women valued being treated with respect, receiving education and support, and being offered timesaving services and wider contraceptive choices at the CSLH. This study demonstrates that such interventions are possible for poor communities, providing significant advantages for women and children.

Amin, R., M. St Pierre, et al. (2001). "Integration of an essential services package (ESP) in child and reproductive health and family planning with a micro-credit program for

poor women: Experience from a pilot project in rural Bangladesh." World Development 29(9): 1611-1621.

In early 1992, a two-phased pilot project, initially integrating a micro-credit program for poor women with a family planning and expanded program of immunization (EPI) (in the first phase) and subsequently and incrementally with an essential services package (ESP) in reproductive and maternal and child health (in the second phase), was initiated in rural Bangladesh. Data on the project show that there has been a significant increase in contraceptive use and a decline in fertility since the initiation of the first phase of the project. There also has been an increase in the dissemination of information on, and utilization of, ESP medical technologies in the intervention community at large. (C) 2001 Elsevier Science Ltd. All rights reserved.

Barnet, B., J. X. Liu, et al. (2007). "Home visiting for adolescent mothers: Effects on parenting, maternal life course, and primary care linkage." Annals of Family Medicine 5(3): 224-232.

PURPOSE Adolescent mothers are at risk for rapidly becoming pregnant again and for depression, school dropout, and poor parenting. We evaluated the impact of a community-based home-visiting program on these outcomes and on linking the adolescents with primary care. **METHODS** Pregnant adolescents aged 12 to 18 years, predominantly with low incomes and of African American race, were recruited from urban prenatal care sites and randomly assigned to home visiting or usual care. Trained home visitors, recruited from local communities, were paired with each adolescent and provided services through the child's second birthday. They delivered a parenting curriculum, encouraged contraceptive use, connected the teen with primary care, and promoted school continuation. Research assistants collected data via structured interviews at baseline and at 1 and 2 years of follow-up using validated instruments to measure parenting (Adult-Adolescent Parenting Inventory) and depression (Center for Epidemiologic Studies Depression). School status and repeat pregnancy were self-reported. We measured program impact over time with intention-to-treat analyses using generalized estimating equations (GEE). **RESULTS** Of 122 eligible pregnant adolescents, 84 consented, completed baseline assessments, and were randomized to a home-visited group (n = 44) or a control group (n = 40). Eighty-three percent completed year 1 or year 2 follow-up assessments, or both. With GEE, controlling for baseline differences, follow-up parenting scores for home-visited teens were 5.5 points higher than those for control teens (95% confidence interval, 0.5-10.4 points; P = .03) and their adjusted odds of school continuation were 3.5 times greater (95% confidence interval, 1.1-11.8; P < .05). The program did not have any impact on repeat pregnancy, depression, or linkage with primary care. **CONCLUSIONS** This community-based home-visiting program improved adolescent mothers' parenting attitudes and school continuation, but it did not reduce their odds of repeat pregnancy or depression or achieve coordination with primary care. Coordinated care may require explicit mechanisms to promote communication between the community program and primary care.

Bashour, H. N., M. H. Kharouf, et al. (2008). "Effect of postnatal home visits on maternal/infant outcomes in Syria: a randomized controlled trial." Public Health Nurs 25(2): 115-25.

OBJECTIVE: Early postpartum home visiting is universal in many Western countries. Studies from developing countries on the effects of home visits are rare. In Syria, where the postpartum period is rather ignored, this study aimed to assess whether a community-based intervention of postnatal home visits has an effect on maternal postpartum morbidities; infant morbidity; uptake of postpartum care; use of contraceptive methods; and on selected neonatal health practices. **DESIGN:** A randomized controlled trial was carried out in Damascus. Three groups of new mothers were randomly allocated to receive either 4 postnatal home visits (A), one visit (B), or no visit (C). **SAMPLE:** A total of 876 women were allocated and followed up. **INTERVENTION:** Registered midwives with special training made a one or a series of home visits providing information, educating, and supporting women. **RESULTS:** A significantly higher proportion of mothers in Groups A and B reported exclusively breastfeeding their infants (28.5% and 30%, respectively) as compared with Group C (20%), who received no visits. There were no reported differences between groups in other outcomes. **CONCLUSIONS:** While postpartum home visits significantly increased exclusive breastfeeding, other outcomes did not change. Further studies framed in a nonbiomedical context are needed. Other innovative approaches to improve postnatal care in Syria are needed.

Billings, D. L., J. Fuentes Velasquez, et al. (2003). "Comparing the quality of three models of postabortion care in public hospitals in Mexico City." Int Fam Plan Perspect 29(3): 112-20.

CONTEXT: Each year, an estimated 120,000 women in Mexico seek treatment in public hospitals for abortion-related complications--the country's fourth leading cause of maternal mortality. Models of postabortion care emphasizing counseling and provision of contraceptives have the potential to improve the quality of care these women receive. **METHODS:** Between April 1997 and August 1998, women treated for abortion complications in six Mexican Institute of Social Security (IMSS) hospitals in the Mexico City metropolitan area were surveyed. Data related to patient-provider interaction, information provision and counseling were analyzed for three models of care: sharp curettage standard care, sharp curettage postabortion care and manual vacuum aspiration postabortion care. **RESULTS:** Women in the two postabortion care groups rated the quality of services they received more highly than did those receiving sharp curettage standard care. A significantly greater proportion of women treated under the postabortion care models than of those treated under the sharp curettage standard model received information about their health status before treatment, the uterine evacuation procedure, signs of postabortion complications and care at home. In addition, a greater proportion of women treated under the postabortion care models accepted a contraceptive method before leaving the facility (64-78% vs. 40%). **CONCLUSIONS:** Implementation of a postabortion care model contributes to the delivery of high-quality services to women experiencing abortion complications.

The standard IMSS model of postabortion treatment should be modified to emulate those in hospitals that systematically link general counseling and family planning services to the clinical services provided to women with abortion complications.

Bolam, A., D. S. Manandhar, et al. (1998). "The effects of postnatal health education for mothers on infant care and family planning practices in Nepal: a randomised controlled trial." *BMJ* **316**(7134): 805-11.

OBJECTIVES: To evaluate impact of postnatal health education for mothers on infant care and postnatal family planning practices in Nepal. **DESIGN:** Randomised controlled trial with community follow up at 3 and 6 months post partum by interview. Initial household survey of study areas to identify all pregnant women to facilitate follow up. **SETTING:** Main maternity hospital in Kathmandu, Nepal. Follow up in urban Kathmandu and a periurban area southwest of the city. **SUBJECTS:** 540 mothers randomly allocated to one of four groups: health education immediately after birth and three months later (group A), at birth only (group B), at three months only (group C), or none (group D). **INTERVENTIONS:** Structured baseline household questionnaire; 20 minute, one to one health education at birth and three months later. **MAIN OUTCOME MEASURES:** Duration of exclusive breast feeding, appropriate immunisation of infant, knowledge of oral rehydration solution and need to continue breast feeding in diarrhoea, knowledge of infant signs suggesting pneumonia, uptake of postnatal family planning. **RESULTS:** Mothers in groups A and B (received health education at birth) were slightly more likely to use contraception at six months after birth compared with mothers in groups C and D (no health education at birth) (odds ratio 1.62, 95% confidence interval 1.06 to 2.5). There were no other significant differences between groups with regards to infant feeding, infant care, or immunisation. **CONCLUSIONS:** Our findings suggest that the recommended practice of individual health education for postnatal mothers in poor communities has no impact on infant feeding, care, or immunisation, although uptake of family planning may be slightly enhanced.

Bossyns, P., H. Miye, et al. (2002). "Supply-level measures to increase uptake of family planning services in Niger: the effectiveness of improving responsiveness." *Tropical Medicine & International Health* **7**(4): 383-390.

Objective: To show that low-cost attitudinal, structural and procedural changes aimed at improving responsiveness to patients have the potential to increase uptake of family planning (FP) even among populations considered reluctant to do so by health personnel. **Methods:** Intervention study with before-after comparison of contraceptive acceptance, couple-years of protection (CYP) and an 'index of contraceptive uptake' (IUC) in rural health centres in Niger. The intervention consists of a package of instructions to actively propose family planning, integrated within curative and under-fives consultations, coupled with measures to increase the health centres' responsiveness to their clients. **Results:** Implementation of the intervention package was followed by marked increases in

family planning uptake. Conclusion: Health services in Niger present an untapped potential for improving family planning through low-cost supply-side measures.

Cisse, C. T., A. Diagne, et al. (2004). "[Improving the quality of care after spontaneous abortions in rural Senegal]." Sante **14**(4): 245-50.

OBJECTIVES: To evaluate the feasibility and impact on quality of decentralising care for spontaneous abortion (post-abortion care, PAC) in rural areas of Senegal.

PATIENTS AND METHOD: This prospective study concerns all patients who had PAC services at 6 medical centres in the districts of Kaolack and Fatick. A preintervention baseline study was performed to evaluate the number of cases treated in these centres. We then introduced a new treatment protocol for PAC, which included manual vacuum aspiration (MVA) and quarterly visits for supervision in each centre from 1 August 2001 through 30 September 2002. An evaluation was performed at the end of the program and 6 months after that.

Results were compared with the baseline data for the 14 months before the intervention period. We used the chi(2) test to compare proportions and set the threshold of significance at 5%. **RESULTS:** The new model for PAC made it possible to increase the number of patients treated for incomplete abortion by 22%. Their average age was 25 years, and 71% had first-trimester pregnancy losses. MVA was performed for 56%. Hospitalisation lasted a mean of 4 hours compared with the 48 hours at baseline, and the proportion of patients referred to the regional hospital for complications fell from 35% to 7%. The mean direct average cost fell by 3,500 F CFA. The number of patients with contraception in place before discharge rose from 0 to 20%, and 94% of the patients questioned were satisfied with the quality of the services they received. Six month after the program ended, the level of utilisation of PAC services continued to increase (by 11%) and the proportion leaving with contraception reached 33%.

CONCLUSION: Decentralisation of PAC treatment in rural areas is possible without major expense, and it improves care for women with incomplete abortions.

David, P. H., L. Reichenbach, et al. (2007). "Women's reproductive health needs in Russia: what can we learn from an intervention to improve post-abortion care?" Health Policy and Planning **22**(2): 83-94.

It has been well documented that abortion is a common means of controlling fertility in Russia. Women undergo repeat abortions throughout their reproductive lives, but recent studies of abortion trends in the Russian Federation suggest that abortion rates are on the decline, use of modern contraceptives is increasing, and women dislike abortion as a method of fertility control. Using data collected during 1999-2003 in women's health facilities in three Russian cities, this paper reports the results of an evaluation of interventions to improve post-abortion care, which show an impressive increase in post-abortion contraceptive counselling but no reduction in the rate at which women present at clinics for repeat abortions. The findings indicate a discrepancy between women's stated preferences for modern medical contraceptive methods and their abortion-seeking behaviour. Further exploration of these data suggests that certain women resort to abortion

with greater frequency than others, and points to the need for a more focused investigation of these women. These results indicate the complexities associated with changing what has been a relatively common and long-standing practice, and have implications for improving reproductive health services. Meeting the reproductive health needs of Russian women requires not only improved provider and client knowledge but may also demand a more focused delivery of client-centred care than may be the case in other settings.

Delvaux, T., S. Saeur, et al. (2008). "Integration of comprehensive abortion-care services in a Maternal and Child Health clinic in Cambodia." Tropical Medicine & International Health **13**(8): 962-969.

OBJECTIVES To document the pilot experience of provision of safe abortion/post-abortion services implemented in 2002 at the Mother Child Health clinic in Sihanoukville, Cambodia, and to profile clients and assess their uptake of post-abortion contraception. **METHODS** The initial package of safe abortion/post-abortion clinics (SAPAC) services included counselling on family planning and prevention of sexually transmitted infections, pain management, Manual Vacuum Aspiration procedure and standard universal precautions at an affordable price (US\$12.5). SAPAC services became operational in August 2002. The data of medical records from 1 August 2002 to 31 December 2005 (2224 clients) were analysed. **RESULTS** The mean number of clients per month attending SAPAC services ranged from 26 in 2002 to 64 in 2005. Fifty-three per cent were housewives, 24% worked in sales or services, 8% in factories, 11% in bars or karaoke lounges and 3% were brothel-based sex workers. Ninety-three per cent of clients came for induced abortion and 7% sought post-abortion care. Pain management was used in 99% of cases. The overall rate of complications during intervention was 2.1% and dropped from 9.4% in 2002 to 1.3% in 2005. After SAPAC implementation, fewer women in Sihanoukville sought abortion services without any quality control and a safer technique was used. On average, 40% of patients took up contraception after the abortion. **CONCLUSIONS** Integrating comprehensive abortion-care services at a peripheral government health facility is feasible. There is a demand for such services provided at an affordable price in Sihanoukville, Cambodia.

Douthwaite, M. and P. Ward (2005). "Increasing contraceptive use in rural Pakistan: an evaluation of the Lady Health Worker Programme." Health Policy Plan **20**(2): 117-23.

Past efforts to promote family planning in Pakistan have been disappointing, but between 1990-91 and 2000-01 contraceptive use has more than doubled. This rise has coincided with a concerted effort on the part of the Pakistani government to increase access to contraceptive services, particularly in rural areas. The Lady Health Worker Programme (LHWP), initiated under the Ministry of Health in the early 1990s, aimed at integrating family planning into the doorstep provision of primary health care. This paper presents findings from the first national evaluation of this Programme. Data are analyzed from a random sample survey of 4277 women living in households served by the LHWP and those living in control areas. Logistic regression analysis was performed to determine the effect of the

Programme on the uptake of modern reversible contraceptive methods, controlling for other independent variables. The data provide strong evidence that the LHWP has succeeded in increasing modern contraceptive use among rural women. Women served by Lady Health Workers are significantly more likely to use a modern reversible method than women in communities not served by the Programme (OR=1.50, 95% CI=1.04-2.16, p=0.031), even after controlling for various household and individual characteristics. The model of providing doorstep services through community-based female workers should remain central to achieving universal access to safe family planning methods by the end of the decade--the long-term objective of Pakistan's most recent population policy adopted in 2002.

Fullerton, J., A. Fort, et al. (2003). "A case/comparison study in the Eastern Region of Ghana on the effects of incorporating selected reproductive health services on family planning services." *Midwifery* **19**(1): 17-26.

Objective: to assess the impact on the provision of family planning (FP) services when FP providers were also trained to provide additional, selected, reproductive health services. Design: case/comparison study. Participants and settings: twenty-four FP service delivery points in which training in sexually transmitted infection prevention and control services or post-abortion care services had been initiated (case facilities), were compared to 19 control facilities in which similar provider training had not yet been targeted. All settings were located in the Eastern Region of Ghana. Measurements: service statistics for three study years (1996-1998) were reviewed. Structured interviews with providers, managers and clients provided qualitative data concerning impact and satisfaction. Findings: case facilities which had integrated these additional reproductive health (RH) services experienced consistently higher numbers of clients and the total number of clients receiving FP services increased over time. There was also a statistically significant increase in continuing FP clients within case facilities. In contrast, the number of FP clients serviced in the comparison area remained basically unchanged over time. Key conclusions: interviews conducted with providers and managers in both types of settings indicated strong support for receipt of training to provide these integrated services and a request for additional training in an even broader array of RH and adult/child services. Clients also perceived the benefit of additional RH services and perceived these services to be of high quality. Implications for practice: expanding the repertoire of clinical skills of FP providers, enabling these practitioners to render RH services that augment basic FP services, has the potential to increase the number of new and continuing FP clients, and increases the satisfaction of both providers and consumers with respect to these services.

Huntington, D. and A. Aplogan (1994). "The integration of family planning and childhood immunization services in Togo." *Stud Fam Plann* **25**(3): 176-83.

Improvements in the constellation of services in the African context are largely addressed through attaining better measures of service integration, which can be achieved through improved referral across categories of health programs. The use of an unobtrusive referral message that linked family planning and the Expanded

Program of Immunizations (EPI) services was tested in an operations research study in Togo. The introduction of the referral message was accompanied by an 18-percent increase in awareness of available family planning services and an increase in the average monthly number of new family planning clients of 54 percent. These positive results indicate that the use of referral can have a significant and dramatic impact on family planning services in a relatively short time. In Togo, no evidence existed of a negative impact on EPI services, and a majority of the EPI providers reported satisfaction with the effect of the referral message at the close of the study.

Johnson, B. R., S. Ndhlovu, et al. (2002). "Reducing unplanned pregnancy and abortion in Zimbabwe through postabortion contraception." *Studies in Family Planning* 33(2): 195-202.

In many countries, women treated for complications from spontaneous or unsafely induced abortion lack access to contraceptive services. As a result, many of them soon have a subsequent unplanned pregnancy or a repeat abortion, placing their health at increased risk. This report presents the results of a prospective intervention study on postabortion family planning conducted in the two largest public hospitals in Zimbabwe. Women at Harare Central Hospital, in the capital, received a postabortion family planning intervention, and Mpilo Central Hospital, in Bulawayo, served as the control site. The study cohort was 982 women, 527 of whom were followed for a 12-month period. During the follow-up period, significantly more women used highly effective methods of contraception, significantly fewer unplanned pregnancies occurred, and fewer repeat abortions were performed at the intervention site than at the control site. These results offer compelling evidence that ward-based contraceptive services provided to women treated for incomplete abortion can significantly reduce subsequent unplanned pregnancies. The results also suggest that postabortion family planning services can reduce the incidence of repeat abortion.

Mahomed, K., J. Healy, et al. (1997). "Family planning counselling--a priority for post abortion care." *Cent Afr J Med* 43(7): 205-7.

OBJECTIVE: To assess the impact of providing contraceptive care to post abortal women. **DESIGN:** This was a descriptive study in which data were collected through subject interviews. **SETTING:** Women presenting with complications of abortion at Harare and Parirenyatwa Hospitals, Harare. **SUBJECTS:** 2,050 women with complications of abortion. **MAIN OUTCOME MEASURES:** Use of a contraceptive method before and after the intervention. **RESULTS:** Basic characteristics are similar to those reported previously. Seventy six per cent were not using any form of contraception prior to pregnancy. After the intervention 97% were discharged with a contraceptive method of their choice. **CONCLUSIONS:** The results emphasize the importance of family planning in the prevention of unplanned pregnancies and the need to make these services easily available and accessible. Emphasis should initially be on eliminating need for abortion by provision of adequate family planning services.

Murray, S. A. (1990). "Family planning in rural Africa: Can it work?" Family Practice 7(1): 5-8.

High fertility is the major demographic problem presently affecting rural Kenya. Chogoria Hospital has attempted to provide a community based family planning service to address this issue. This paper describes the intervention used and analyses the current contraceptive practice in the area. It is concluded that community based distribution of family planning commodities may be associated with a marked decrease in fertility rate and family size within a relatively short period. Family planning initiatives in Africa may be remarkably cost-effective interventions in the development of a nation and be associated with well spaced and healthy children.

Nobili, M. P., S. Piergrossi, et al. (2007). "The effect of patient-centered contraceptive counseling in women who undergo a voluntary termination of pregnancy." Patient Educ Couns 65(3): 361-8.

OBJECTIVE: The aim of the study was to evaluate, by means of a randomized controlled trial, whether a patient-centered contraceptive counseling intervention increased the use of contraception, and the knowledge and positive attitudes towards contraception, in women who undergo a termination of pregnancy (TOP). **METHODS:** The study was carried out at the San Paolo Hospital of Milan between the 1st of February and the 31st of May 2004. Participants (41 women; ages 20-44 years) were randomly divided into two groups: an experimental group (n = 20), who received patient-centered contraceptive counseling, and a control group (n = 21), who received the routine treatment in use at the San Paolo Hospital and were referred to the community health centers after the TOP. Both groups were administered a questionnaire at two points in time (before the counseling and 1 month later) which evaluated participants' knowledge, attitudes and use of contraception (the latter was also followed up 3 months later). The counseling intervention lasted 30 min and was carried out by a psychologist and a gynaecologist. **RESULTS:** It was found that knowledge, favorable attitudes and use of effective contraception increased significantly for the experimental group, whereas there was no significant change for the control group. **CONCLUSION:** The counseling intervention was therefore found to be efficacious in improving understanding and use of contraception in women who have undergone a TOP. The hope is that this will contribute to increased use of effective contraception in the future. **PRACTICE IMPLICATIONS:** Following the principles of patient-centered medicine, this study provides evidence for the importance of exploring woman's feelings, beliefs, wishes and expectations regarding contraception within a contraceptive counseling intervention.

Paxman, J. M., A. Sayeed, et al. (2005). "The India Local Initiatives Program: a model for expanding reproductive and child health services." Stud Fam Plann 36(3): 203-220.

The India Local Initiatives Program adapted a model used in Indonesia and Bangladesh to implement the government's reproductive and child health strategy. From 1999 to 2003, three Indian nongovernmental organizations (NGOs) provided services for 784,000 people in four northern states. The program

established health committees in 620 villages, recruited and trained 1,850 community health volunteers, and added 232 sites to extend government services. Using three strategies -demand creation, increased access to services, and local capacity building- the NGOs increased contraceptive-use rates by 78 percent, on average; child immunizations by 67 percent; and antenatal care by 78 percent among the populations served. Community resources-such as local health personnel, community-supplied clinic sites, and community drug funds-added 40 cents to every dollar provided by donors. This model proved to be a suitable platform upon which to build health-care service delivery and create behavioral change, and the NGOs quickly found ways to sustain and expand services

Quinlivan, J. A., H. Box, et al. (2003). "Postnatal home visits in teenage mothers: a randomised controlled trial." *Lancet* **361**(9361): 893-900.

BACKGROUND: Teenage pregnancies are associated with negative socioeconomic effects. Our aim was to ascertain whether a postnatal home-visiting service for teenage mothers younger than age 18 years could reduce the frequency of adverse neonatal outcomes and improve knowledge of contraception, breastfeeding, and infant vaccination schedules in this parent group. **METHODS:** We enrolled 139 adolescents, attending a teenage pregnancy clinic, in a randomised controlled trial. After completing an antenatal questionnaire designed to assess their knowledge of contraception, infant vaccination, and breastfeeding, we assigned participants to either receive five structured postnatal home visits by nurse-midwives (n=65) or not (n=71). Assessment interviews were done 6 months postpartum. Our primary endpoint was unadjusted difference in knowledge between groups, and incidence of predefined adverse neonatal outcomes. Analysis was by intention to treat. **FINDINGS:** Three women withdrew before randomisation because of late fetal loss, 11 mothers withdrew because of adverse neonatal outcomes (adverse neonatal outcome was a primary endpoint, but resulted in withdrawal from the study for knowledge outcomes), and one left voluntarily. Follow-up data were, therefore, available for 124 teenagers. Postnatal home visits were associated with a reduction in adverse neonatal outcomes (intervention: 2; control: 9; relative risk 0.24, 95% CI 0.05-1.08), and a significant increase in contraception knowledge (mean difference 0.92, 95% CI 0.32-1.52). However, there was no significant increase in knowledge with respect to breastfeeding or infant vaccination schedules associated with the home visits. **INTERPRETATION:** Postnatal home-visiting services by nurse-midwives reduce adverse neonatal events and improve contraception outcomes, but do not affect breastfeeding or infant vaccination knowledge or compliance.

Sathar, Z., A. Jain, et al. (2005). "Introducing Client-centered Reproductive Health Services in a Pakistani Setting." *Studies in Family Planning* **36**(3): 221-234.

Pakistan is a high-fertility country with elevated levels of maternal mortality and unmet need for family planning. Limited access to and poor quality of reproductive health services and gender-related problems comprise the major explanations for these poor indicators. The authors designed an intervention to

address some of these issues and implemented it on a quasi-experimental basis in Bhalwal Tehsil of the Sargodha district of Punjab. The intervention introduced a client-centered approach to providing reproductive health services, including family planning and infant, child, and maternal health care. The intervention consisted of training health-care providers based in fixed-location clinics and in communities. It introduced the concept of SAHR (an acronym for salutation, assessment, help, and reassurance), to inculcate a client-centered approach to care that acknowledges explicitly and addresses a client's gender and power relations within her family and household. Results of the intervention indicate significant effects on providers' behavior related to SAHR elements. The changes provide demonstrable evidence that the public sector can shift toward client-centered services in reproductive health care in a challenging setting. (PsycINFO Database Record (c) 2009 APA) (journal abstract)

Simmons, G. B., D. Balk, et al. (1991). "Cost-effectiveness analysis of family planning programs in rural Bangladesh: evidence from Matlab." Stud Fam Plann **22**(2): 83-101.

The Family Planning Health Services Project in Matlab is often seen as more expensive than similar activities carried out by the government of Bangladesh. At the same time, it has been observed that the project is much more effective. The alleged high cost of the project is said to make it difficult to replicate throughout the nation. Previously, the true costs of the project had not been documented. This study systemically examines the cost of the project and assesses its cost-effectiveness. An experimental design framework is used as a basis for understanding the cost-effectiveness of the project, although a sensitivity analysis lends further support to the relative efficiency of the approach undertaken in Matlab. Although in the aggregate, the Matlab Project is more expensive than the government's family planning program, it is also more effective, generating enough output to offset the extra costs of the intensified delivery system.

Solo, J., D. L. Billings, et al. (1999). "Creating linkages between incomplete abortion treatment and family planning services in Kenya." Studies in Family Planning **30**(1): 17-27.

Postabortion care has received increasing emphasis as an important intervention to address part of the problem of unsafe abortion. Although a good deal of attention has been paid to improving emergency treatment of abortion complications, the other elements of postabortion care, including providing postabortion family planning services, have received less attention and are rarely found in health-care settings around the world. This report describes a study that was conducted in Kenya to test three different models of ways to provide postabortion family planning. The study shows that these new services are both feasible and acceptable to providers and patients, and also shows how effective they can be. Whereas only 7 percent of women received family planning counseling according to the baseline survey, this proportion increased to 68 percent in the postintervention period. In addition, 70 percent of women who decided to begin using contraceptives received a method, compared with only 3 percent at baseline. The provision of postabortion family planning counseling and

methods on the gynecological ward by ward staff was found to be the preferred and most effective model.

Sultan, M., J. G. Cleland, et al. (2002). "Assessment of a new approach to family planning services in rural Pakistan." American Journal of Public Health **92**(7): 1168-1172.

Objectives. In 1993, the government of Pakistan started a new approach to the delivery of contraceptive services by training literate married women to provide doorstep advice and supplies in their own and neighboring communities. This report assesses whether this community-based approach is starting to have an impact on contraceptive use in rural areas. **Methods.** A clustered nationally representative survey was used to collect data on contraceptive use and access to services in each cluster. Two-level logistic regression was applied to assess the effects of service access, after potential confounders were taken into account. **Results.** Married women living within 5 km of 2 community-based workers were significantly more likely to be using a modern, reversible method of contraception than those with no access (odds ratio=1.74; 95% confidence interval=1.11, 2.71). **Conclusions.** After decades of failure, the managers of the family planning program have designed a way of presenting modern contraceptives that is appropriate to the conditions of rural Pakistan. The new community-based approach should be steadily expanded.

Vernon, R., J. R. Lopez-Canales, et al. (1993). "The impact of a perinatal reproductive health program in Honduras." International Family Planning Perspectives **19**(3): 103-109.

To improve perinatal service delivery at the Hospital Materno-Infantil in Tegucigalpa, the Honduran Social Security System created a reproductive health program with five main components: a pre-natal education program, a reproductive health counseling service, an expansion of contraceptive options offered in the postpartum period, a postpartum clinic for women to visit on the 40th day after birth, and an improved perinatal data collection system. The prenatal education program, attended by approximately half of the more than 6,000 women who delivered at the hospital during a 15-month period, significantly increased the women's knowledge about such topics as reproductive risk factors, warning signs during pregnancy, breastfeeding and infant care. Rates of acceptance of postpartum family planning increased significantly and rapidly, from 9% of women who delivered in December 1990 to 47% in February 1992. Over a 10-month period, the number of women seeking family planning and reproductive health counseling increased from 33 per month to 296 per month. The proportion of women who returned for a checkup at 40 days postpartum increased from about 15% to almost 40%.

Warren, C., A. Mwangi, et al. (2010). "Safeguarding maternal and newborn health: improving the quality of postnatal care in Kenya." Int J Qual Health Care **22**(1): 24-30.

OBJECTIVE: To assess changes in the quality of care following the introduction of a new postnatal package. **DESIGN:** Using a pre-test, post test design to observe client-provider interactions with women 0-6 weeks postpartum. **SETTING:** Four

health facilities in a rural district, eastern Kenya. PARTICIPANTS: Health providers and postpartum women. INTERVENTION: Introduction of comprehensive postnatal package of care, with three targeted assessments within 48 h of birth, 1-2 weeks and 6 weeks, to providers working in maternity and maternal and child health clinics. Main outcome measure Improved quality of postnatal counselling. RESULTS: Increased mean scores for counselling on danger signs in the newborn (0.24-1.39) and infant feeding (1.33-2.19) were noted. The total quality of care index for the newborn increased overall but remained lower than desired (from 3.37 to 6.45 out of 11). Essential maternal care index improved (3.4-8.72 out of 23). More women accepted a family planning method at 6 weeks (35-63%). CONCLUSIONS: The introduction of new comprehensive postnatal care package improved performance of providers in counselling in maternal and newborn complications, infant feeding and family planning. Additional studies looking at the postpartum family planning needs for women living with HIV would also be useful. However, providers would benefit from additional clinical skills for managing maternal and newborn complications during the critical period following childbirth.

Zhu, J. L., W. H. Zhang, et al. (2009). "Impact of post-abortion family planning services on contraceptive use and abortion rate among young women in China: A cluster randomised trial." European Journal of Contraception and Reproductive Health Care **14**(1): 46-54.

Objectives: To compare two post-abortion family planning (FP) service packages on contraceptive use and repeat abortion rate among young women in three cities in China. Methods: In this cluster-randomized trial, one FP service package included provision of limited information and referral to existing FP services, and the other, more comprehensive, package consisted - in addition to the above simple package - of individual counselling, free provision of contraceptive materials, and involvement of the male partner. Eight matched pairs of hospitals were certified by centralized randomization. Women undergoing abortion were followed up for six months, and data were collected in two rounds, before and after the intervention. Results: We followed a total of 2336 women younger than 25 years (555 before and 555 after the simple intervention package; 634 before and 592 after the comprehensive intervention package). Both packages increased use of any contraceptive method, but the comprehensive approach also increased use of more effective methods. Odds ratios for consistent and correct use of condoms were 2.32 (95% confidence interval 1.55-3.46) and 2.78 (1.81-4.26), respectively, compared with the simple package. The rates of unwanted pregnancies and repeat abortions were somewhat reduced for both packages, with no significant statistical difference between them. Conclusion: Couples who received the comprehensive post-abortion FP service appear to use more effective contraceptive methods and show better compliance.

THE NAVRONGO PROJECT

Debuur, C., J. F. Phillips, et al. (2002). "The impact of the Navrongo Project on contraceptive knowledge and use, reproductive preferences, and fertility." Studies in Family Planning **33**(2): 141-164.

The Navrongo Community Health and Family Planning Project is a quasi-experimental study designed to test the hypothesis that introducing health and family planning services in a traditional African societal setting will introduce reproductive change. This article presents the impact of the initial three years of project exposure on contraceptive knowledge, awareness of supply sources, reproductive preferences, contraceptive use, and fertility. Findings show that knowledge of methods and supply sources increased as a result of exposure to project activities and that deployment of nurses to communities was associated with the emergence of preferences to limit childbearing. Fertility impact is evident in all treatment cells, most prominently in areas where nurse-outreach activities are combined with strategies for involving traditional leaders and male volunteers in promoting the program. In this combined cell, the initial three years of project exposure reduced the total fertility rate by one birth, comprising a 15 percent fertility decline relative to fertility levels in comparison communities.

Pence, B. W., P. Nyarko, et al. (2007). "The effect of community nurses and health volunteers on child mortality: the Navrongo Community Health and Family Planning Project." Scand J Public Health **35**(6): 599-608.

BACKGROUND: Despite effective treatments and preventive measures for the major causes of child illness and death in less wealthy nations, child mortality remains high in resource-poor settings due in part to ineffective health service delivery models. **METHODS:** The Navrongo Community Health and Family Planning Project is a longitudinal community trial of alternative organizational strategies for health service delivery in a rural, impoverished area of Ghana. In one area, nurses are placed in communities with doorstep visitation and service responsibilities. A second area includes training of a local health volunteer and community involvement in health delivery. A third area combines both strategies. Under-five mortality rates were calculated and Poisson regression was used to adjust for potential confounding characteristics. **RESULTS:** In areas with village-based community nurse services, under-five child mortality fell by 14% during five years of program implementation compared with before the intervention, with reductions in infant (5%), early child (18%), and late child (39%) mortality. The volunteer intervention was associated with a 14% increase in mortality, primarily driven by a 135% increase in early child mortality. Areas with both nurses and volunteers saw an 8% increase, with small increases in all age groups. Mortality in a comparison area with standard Ministry of Health services fell by 4% during the same time period. **CONCLUSIONS:** These results suggest that convenient, accessible professional nursing care can reduce child mortality in impoverished African settings. However, they do not demonstrate a beneficial effect of community volunteers and suggest a possible negative impact on children's survival.

DHAKA DOORSTEP STRATEGY

Routh, S. and K. Barkat e (2000). "An economic appraisal of alternative strategies for the delivery of MCH-FP services in urban Dhaka, Bangladesh." Int J Health Plann Manage **15**(2): 115-32.

The strategy of distributing maternal and child health and family planning (MCH-FP) services at the doorsteps of the clients--through routine visits to the eligible couples by trained fieldworkers--has been instrumental in increasing the contraceptive prevalence rate (CPR), reducing fertility and attaining a considerably high immunization coverage of children and women in Bangladesh. The doorstep strategy, however, appeared to be labour-intensive and costly. With the maturity of the programme, priorities of the national MCH-FP programme have shifted to a stage that calls for more cost-effective service-delivery strategies, capable of offering a broader package of reproductive and other essential health services. The main objective of the present study was to examine the cost and effectiveness implications of the alternative strategies of delivering services from fixed sites--field-tested within an ICDDR,B operations research--in comparison to the conventional (existing) doorstep strategy. The key findings of the economic appraisal indicated that, at the end of the operations research intervention, both cost per birth averted and cost per QALY gained were lowest for the option of delivering services from static (fixed-site) clinics: US\$13 and US\$17 compared with the corresponding values of US\$18 and US\$42 for the doorstep strategy. Provision of health and family planning services from clinics--complemented with a reduced system of outreach workers to inform and target the hard-to-reach clients--was found to be the most cost-effective service-delivery alternative.

Routh, S., S. el Arifeen, et al. (2001). "Coping with changing conditions: alternative strategies for the delivery of maternal and child health and family planning services in Dhaka, Bangladesh." Bull World Health Organ **79**(2): 142-9.

The door-to-door distribution of contraceptives and information on maternal and child health and family planning (MCH-FP) services, through bimonthly visits to eligible couples by trained fieldworkers, has been instrumental in increasing the contraceptive prevalence rate and immunization coverage in Bangladesh. The doorstep delivery strategy, however, is labour-intensive and costly. More cost-effective service delivery strategies are needed, not only for family planning services but also for a broader package of reproductive and other essential health services. Against this backdrop, operations research was conducted by the Centre for Health and Population Research at the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) from January 1996 to May 1997, in collaboration with government agencies and a leading national nongovernmental organization, with a view to developing and field-testing alternative approaches to the delivery of MCH-FP services in urban areas. Two alternative strategies featuring the withdrawal of home-based distribution and the delivery of basic health care from fixed-site facilities were tested in two areas of Dhaka. The clinic-based service delivery strategy was found to be a feasible alternative to the resource-intensive doorstep system in urban Dhaka. It did not adversely affect

programme performance and it allowed the needs of clients to be addressed holistically through a package of essential health and family planning services.

MATLAB STUDIES

Chaudhuri, A. (2008). "Revisiting the impact of a reproductive health intervention on children's height-for-age with evidence from rural Bangladesh." Economic Development and Cultural Change **56**(3): 619-656.

This article evaluates the impact of a reproductive health program on the nutritional status of children under the age of 10 in rural Bangladesh. The program was administered in a treatment area while retaining an equally impoverished area as control through a doorstep delivery, allowing us to estimate treatment effects without problems of endogenous program placement and self-selected participation. A reduced-form demand approach has been applied using Matlab Health and Socioeconomic Survey of 1996 data to estimate program effects, returns to mother's education, the joint effect of the program and household characteristics, as well as gender differences in nutritional outcomes. Results indicate that the program significantly improves the health of boys and girls in the treatment area. Mother's education has a positive impact on child's health, more so for girls than boys. The program is a substitute for maternal education in improving boys' health, whereas it is a complement to household wealth in improving girls' nutritional status.

Fauveau, V., B. Wojtyniak, et al. (1990). "Perinatal mortality in Matlab, Bangladesh: a community-based study." Int J Epidemiol **19**(3): 606-12.

Perinatal deaths, comprising stillbirths and deaths during the first week of life, were monitored over the eight-year period 1979 to 1986 in a rural Bangladeshi population of 196,000. The perinatal mortality rate was 75 per 1000 total births. The rate was 13% higher in males than females. Stillbirth and early neonatal mortality rates were 37 and 38 per 1000 total births, respectively. The major causes of perinatal deaths are presented, as well as some of the maternal determinants. During the period under study, perinatal mortality declined regularly and significantly over time in an area covered by an intensive Family Planning and Health Services programme, but not in the adjacent control area. This raises the issue of the impact of such a programme upon perinatal mortality, and the need to include a strong maternity care component into primary healthcare strategies if further reductions of perinatal mortality are to be achieved.

Hale, L., J. DaVanzo, et al. (2006). "Why are infant and child mortality rates lower in the MCH-FP area of Matlab, Bangladesh?" Stud Fam Plann **37**(4): 281-92.

Infant and child mortality rates are significantly lower in the Maternal and Child Health-Family Planning (MCH-FP) area of Matlab, Bangladesh, than in a comparison area. The two areas are similar in terms of socioeconomic characteristics, but the MCH-FP area provides better maternal and child health and family planning services, resulting in different reproductive patterns, including lower fertility rates and longer intervals between pregnancies. We use data from the Matlab Demographic Surveillance System for nearly 126,000

singleton live births that occurred between 1982 and 2002 to investigate the extent to which the different reproductive patterns in the MCH-FP area explain why infant and child mortality rates are lower there. Differences in reproductive patterns account for a small portion (up to 20 percent) of the variation in these rates between the MCH-FP and comparison areas, suggesting that the majority of the difference is due to the quality of MCH services.

Maine, D., M. Z. Akalin, et al. (1996). "Why did maternal mortality decline in Matlab?" Stud Fam Plann **27**(4): 179-87.

In 1991, an article on the Maternity Care Program in Matlab, Bangladesh, reported a substantial decline in direct obstetric deaths in the intervention area, but not in the control area. The decline was attributed primarily to the posting of midwives at the village level. In this article, data are presented from the same period and area on a variety of intermediate events. They indicate that the decline in deaths was probably due to the combined efforts of community midwives and the physicians at the Matlab maternity clinic. Their ability to refer patients to higher levels of care was important. The data further indicate that the decline in deaths depended upon the functioning of the government hospital in Chandpur, where cesarean sections and blood transfusions were available. Midwives might also have made a special contribution by providing early termination of pregnancy, which is legal in Bangladesh.

Ronsmans, C., A. M. Vanneste, et al. (1997). "Decline in maternal mortality in Matlab, Bangladesh: a cautionary tale." Lancet **350**(9094): 1810-4.

BACKGROUND: A study in Matlab, Bangladesh, has provided evidence favouring a community-based maternity-care delivery system. 3 years of this programme coincided with a significant reduction in direct obstetric mortality compared with the 3 years before the programme. We have examined whether the effects of the programme are sustained over time. **METHODS:** Using data from the continuing demographic surveillance system and from special investigations into the rates and causes of maternal mortality during 1976-93, we compared the trends in direct obstetric maternal mortality ratios in the Maternal and Child Health and Family Planning (MCH-FP) area (which has received extensive services in health and family planning since 1977) with those in the comparison area (with no such intensive health inputs). We divided the areas and time periods into discrete groups that best represented the effects of the introduction of the maternity-care programme. **FINDINGS:** Direct obstetric mortality declined by 3% per year (rate ratio 0.97 per year [95% CI 0.95-0.99]); there was no difference between the MCH-FP and comparison areas (1.00 [0.96-1.05]). Direct obstetric mortality halved between 1976-86 and 1987-89 in the northern MCH-FP area, where the maternity-care programme was initiated in 1987 (0.50 [0.22-0.99]), but showed no change in the southern MCH-FP area, which had no such intervention at that time (1.07 [0.64-1.72]). After 1990, when the programme was expanded throughout the MCH-FP area, the southern part showed a downward (non-significant) trend in direct obstetric mortality (0.68 [0.35-1.32]). However, direct obstetric mortality also declined between 1987 and 1989 in the southern

comparison area (0.48 [0.26-0.83]) in the absence of an intense maternity-care programme, and remained stable thereafter. In the northern comparison area, there was no such decline in direct obstetric mortality (0.78 [0.40-1.40]).

INTERPRETATION: Although the introduction of the maternity-care programme coincided with declining trends in direct obstetric mortality in the areas covered by the programme, a decline also occurred in one of the areas not receiving any such interventions. Caution is required in the interpretation of short-term trends in one indicator in studies designed without random allocation of interventions into treatment and control groups.

Simmons, G. B., D. Balk, et al. (1991). "Cost-effectiveness analysis of family planning programs in rural Bangladesh: evidence from Matlab." *Stud Fam Plann* **22**(2): 83-101.

The Family Planning Health Services Project in Matlab is often seen as more expensive than similar activities carried out by the government of Bangladesh. At the same time, it has been observed that the project is much more effective. The alleged high cost of the project is said to make it difficult to replicate throughout the nation. Previously, the true costs of the project had not been documented. This study systemically examines the cost of the project and assesses its cost-effectiveness. An experimental design framework is used as a basis for understanding the cost-effectiveness of the project, although a sensitivity analysis lends further support to the relative efficiency of the approach undertaken in Matlab. Although in the aggregate, the Matlab Project is more expensive than the government's family planning program, it is also more effective, generating enough output to offset the extra costs of the intensified delivery system.

5.4. Annotated bibliography of unpublished studies

Abdel-Tawab, N., S. Loza, et al. (2008). Helping Egyptian women achieve optimal birth spacing intervals through fostering linkages between family planning and maternal/child health services, FRONTIERS, Population Council.

One major challenge facing policy-makers is how to support women in achieving healthier birth intervals, i.e. a birth to conception interval of at least two years. To respond to this challenge, the Population Council's USAID-funded Frontiers in Reproductive Health (FRONTIERS) program, in collaboration with the Egyptian Ministry of Health and Population (MOHP) and the NGO „Social Planning, Analysis and Administration Consultants“ (SPAAC), conducted an operations research study to measure the acceptability and effectiveness of two birth spacing message models. For Model I (health services model), birth spacing messages were communicated through services by health workers to women during prenatal and postpartum periods. Model II (community awareness model), provided this service plus an awareness raising component that targeted men through training community influentials to communicate messages.

Benson, J. and V. Huapaya (2002). Sustainability of postabortion care in Peru, Ipas.

The study described in this report is a follow-up to the original research conducted at Hospital Carrión in 1996-98. The goal of the present study, carried out from 2000-02, was to determine the sustainability of the PAC intervention introduced in the hospital and the extent to which the outcomes of the intervention have continued. Hospital Carrión has provided PAC services without external technical or financial assistance for postabortion care since the conclusion of the original study. The present study is the first known research to examine how well a PAC intervention and resulting improvements have been maintained over the long term.

Billings, D. L., E. Del Pozo, et al. (2003). Testing a model for the delivery of emergency obstetric care and family planning services in the Bolivian public health system, Ipas, Population Council, FRONTIERS.

Unsafe abortion is a serious public health problem in Bolivia, accounting for up to 25 percent of maternal mortality. Postabortion care (PAC) was recognized as a priority public health action in Bolivia in 1994 in the country's preparatory statement for the ICPD. In 1999, PAC services, known as the "treatment of complications of hemorrhage during the first half of pregnancy," were included in Bolivia's revised national health plan, the Seguro Básico de Salud (SBS). Inclusion in the SBS makes PAC services free of charge to women and aims to: 1) increase women's access to services; 2) reduce the cost of service delivery and hospital length of stay; and 3) improve the quality of care. The operations research (OR) project carried out from May 1999 through August 2001 and summarized in this report was undertaken at the request of the Ministry of Health (MSPS) to help guide the improvement of PAC services as the SBS was implemented. A non-experimental design with pre- and post-intervention measurements was implemented in three major maternity hospitals - Hospital de

la Mujer (La Paz), Maternidad Percy Boland (Santa Cruz) and Hospital “Jaime Sánchez Porcel” (Sucre). Given the differences in infrastructure, size, and characteristics of the population served, comparisons are made between pre- and post-intervention results within but not between hospitals. A variety of data collection methods were used, including interviews, observations and record reviews. Data were collected from women treated for incomplete abortion, male partners (with women’s consent and only in the Sucre site), and physicians. Three-month follow-up interviews were conducted with women in the Sucre site. The intervention consisted of re-organization of services to ambulatory care, PAC training, refresher training, and supportive supervision.

Billings, D. L. and R. Vernon (2007). *Avances en la atención posaborto en América Latina y el Caribe: Investigando, aplicando y expandiendo*. Mexico City, Ipas Population Council.

Advances in post-abortion care in Latin America and the Caribbean: Investigating, Applying and Expanding. This report is divided in to five sections covering the following topics: 1) Introduction to PAC and necessary elements for successful PAC; 2) Country-level experiences, including data from 7 different countries; 3) Provider and program information, including how to conduct counseling in PAC settings; 4) Clinical care using diverse technologies, including how to manage pain; and 5) Involvement of men, youth and the community, including how to increase involvement of these various groups in PAC. The appendix includes a list of organizations in the LAC region involved in PAC.

Cappa, L., N. Vartapetova, et al. (2007). *Russia: Integrating family planning into the health system. A case study of the Maternal and Child Health initiative*. Arlington, VA, DELIVER, for USAID.

The pilot phase 1999–2003 Women and Infants’ Health (WIN) project and the scale-up phase 2003–2006 Maternal and Child Health Initiative (MCHI) integrated family planning into the spectrum of maternal and infant health care in 16 regions of the Russian Federation. WIN/MCHI’s innovative design helped regional and municipal government-supported health facilities adopt internationally recognized, client-centered, evidence-based maternal and child health standards and practices in multiple areas: antenatal care; family-centered maternity care; essential newborn care; exclusive breastfeeding; and family planning counseling and services, especially for postpartum and post-abortion clients. Attention was also given to family planning for HIV-positive women and the prevention of mother-to-child transmission of HIV. The objectives were to provide a new evidence-based model for reproductive health care services and to increase access to, demand for, and quality of these services, as well as to increase the practice of preventive health behaviors among women in the community. WIN/MCHI chose strategies that not only stressed evidence-based medicine but that also offered a total paradigm shift from focus on the provider to focus on the client, a shift that transformed the way maternal and infant services were delivered. Implementation involved health care providers, administrators, and authorities in the planning, policymaking, hands-on training, and public education

needed to achieve change. This case study looks specifically at the integration (horizontalization) of the family planning component into the other WIN/MCHI components. As a result, access to client-centered counseling has increased, unplanned pregnancies have decreased, and the abortion rate has declined.

Gasco, M., C. Wright, et al. (2006). Romania: Scaling up integrated family planning services: A case study. Arlington, VA, DELIVER, for USAID.

The Romanian Family Health Initiative (RFHI) rapidly expanded access to family planning services and supplies by integrating family planning into primary health care delivery. The program initially focused on reaching rural clients. The clients represented the majority of Romania's poor and had limited access to family planning services, which were located primarily in urban areas. The RFHI used an innovative Three Pillars Approach that focuses on creating the following three conditions at the same place and at the same time: (1) training rural family health doctors and nurses at primary health care centers in contraceptive technology and client-centered counseling, (2) contraceptive supplies, and (3) demand creation activities. Between 2001 and 2005, family planning services expanded beyond the 210 urban-based clinics to more than 2,200 primary health care centers in rural communities, representing 80 percent of the country's rural areas. As a result, contraceptive prevalence increased significantly, and there was a concurrent and dramatic decrease in abortion rates.

Jacobs, E., C. Brambila, et al. (2002). Reproductive health care in the postnatal period in Guatemala. Quetzaltenango, Ministry of Health Guatemala.

The problem that this operations research addressed was how to increase the proportion of women in Guatemala who receive postnatal care. The study aimed to develop and test a job aid to provide comprehensive care to mothers and children during the first year postpartum, to train physicians, nurses, auxiliary nurses and social workers in its use, and to develop and test strategies and materials for training community health agents to promote services for new mothers during the first year postpartum. It also collected data to establish if these strategies were effective in improving the quality and comprehensiveness of the care received by mothers and children less than one year of age.

Lynam, P. F., J. C. Dwyer, et al. (1994). Inreach: Reaching potential family planning clients within health institutions. New York, AVSC International,, EngenderHealth.

Many women and men all over the world want to delay their next child or do not wish to have any more children. Some do not know about family planning. Of those who do, many do not know how to get services, where and when services are available, what contraceptive methods are offered, or how much services cost. Also, some women and men who do have this information about family planning and want to get services, do not seek out services or initiate discussions with a health worker. Family planning providers usually try to reach these potential clients through outreach strategies, which have been valuable in encouraging the use of services. However, by concentrating its energies in outreach activities, family planning has failed in many ways to reach potential clients within the

health facilities themselves. This paper discusses a strategy to reach these potential clients: the concept of inreach. Inreach focuses on the tens of thousands of service providers, patients, and visitors who spend time in hospitals and clinics every day. Although many of these people would like family planning information and services, opportunities for informing these potential clients are often missed. By orienting all of a health facility's staff to family planning and by creating linkages between family planning and other departments, family planning providers could use a minimum of effort and a few additional resources to reach these clients with information and the offer of services. A combination of inreach and outreach activities can give family planning providers an effective program for informing potential clients and directing them to service-delivery points.

McCarragher, D. R., T. Oronoz, et al. (2007). Operations research study to improve postabortion care (PAC) services among adolescents in the Dominican Republic. Research Triangle Park, NC, FHI.

We designed an operations research study to improve the PAC counseling and contraceptive uptake among adolescent PAC patients seeking public services in the DR. Among PAC patients, the main study goal was that 60% of patients who wished to delay pregnancy be discharged with a contraceptive method. We also examined patients' reports on the counseling they received related to their immediate risk of pregnancy, contraception, HIV/STI risk, and postabortion complications. We evaluated changes in providers' PAC counseling knowledge and practices, and attitudes towards working with adolescent patients, prior to and after implementing the intervention.

Medina, R., R. Vernon, et al. (2001). Expansion of postpartum / postabortion contraception in Honduras, Population Council.

Between 1996 and 1999, the Ministry of Health and the Population Council's INOPAL III Project tested the acceptability of postpartum/postabortion contraception at the Escuela Hospital, the largest in the country. The project showed that more than 30 percent of the women seen for a delivery or a complication due to abortion, were interested in adopting a contraceptive method prior to discharge from the hospital. Given the success of the project, the MOH asked the Population Council's FRONTIERS Program for technical and financial support to extend those services to five additional hospitals in the country.

Mwangi, A., C. Warren, et al. (2008). Strengthening postnatal care services including postpartum family planning in Kenya, Frontiers in Reproductive Health, Population Council, ACCESS-FP, JHPIEGO.

To improve the health and survival of mothers and infants in the postnatal period, the Ministry of Health (MOH) in Kenya increased both the recommended timing and content of postnatal services a woman and her infant should receive to at least three assessments within the first six weeks after childbirth. The feasibility and acceptability of providing postnatal care at these times has not been evaluated, however, and most providers are not aware of this change in policy or how to implement it. The objectives of the study were develop and introduce a

strengthened postnatal care package into one hospital and four health centers in one district, to document the feasibility, acceptability and quality of care of the strengthened postnatal care, and to evaluate the effectiveness of the postnatal package on women's reproductive health behaviors.

Savelieva, I. (2004). Postabortion family planning counseling and services lead to increased contraceptive use, *Frontiers in Reproductive Health*.

The introduction of postabortion family planning service delivery involving training in counseling skills and job aids for providers led to increased use of modern contraceptive methods at 12 months postabortion. The provision of family planning counseling at a postabortion follow-up visit appears to be an important factor in reducing repeat abortions.

Savelieva, I., J. M. Pile, et al. (2003). Postabortion family planning operations research in Perm, Russia, EngenderHealth.

In August 2000, EngenderHealth, the Population Council's FRONTIERS Program and the Research Center of Obstetrics, Gynecology, and Perinatology of the Russian Academy of Medical Sciences (RAMS), with support from the Perm Health Departments, undertook an operations research study to test models for increasing contraceptive use and reducing the repeat abortion rate among abortion clients in Perm, Russia. The study also assessed the direct and indirect costs of abortion and contraceptive use incurred by women in the year following their index abortion (the abortion which took place the day of entry into the study).

Shaheen, M., R. Salman, et al. (2003). Improving postpartum care among low parity mothers in Palestine, Center for Development in Primary Health Care, Al Quds University.

In an effort to improve the health status of Palestinian women and their children in the West Bank and Gaza, the United States Agency for International Development (USAID), in collaboration with the Palestinian Ministry of Health and a number of NGOs, designed and funded a 28-month pilot activity, the Pilot Health Project (PHP), that is expected to have a positive impact on the health of women and children. The project's interventions include establishing a basic package of quality antenatal and postpartum care services aimed at improving the health giving practices of providers and health seeking behavior of families. In addition, the project included three experimental service delivery interventions: (1) reaching low parity women through a second home visit by community health workers (CHWs), (2) involving women's husbands and influential males, and (3) creating outreach linkages with hospitals. This report describes the results of the intervention for low parity women.

Tesfaye, S., T. Fetters, et al. (2006). Expanding our reach: An evaluation of the availability and quality of postabortion care services in three regions in Ethiopia between 2000 and 2004. Chapel Hill, NC, Ipas.

This monograph is the product of four years of collaboration between Ipas Ethiopia and three Regional Health Bureaus (RHBS) to address the problem of

maternal deaths and morbidity from the complications of unsafe abortion. These efforts have included work at the community, facility and national levels: conducting advocacy; building the capacity of local partners to provide postabortion care (PAC) services; improving access to manual vacuum aspiration (MVA) instruments for treatment of incomplete abortion; and training health-care providers. This report presents the results of a pre-post-intervention comparative assessment of PAC services in 119 non-randomly selected facilities in the Addis Ababa, Amhara and Oromia regions. In these regions, an intensive package of postabortion care intervention activities was introduced in 42 of 119 facilities to improve quality and availability of PAC services. The evaluation elaborates on the successes and challenges of scaling up PAC services in three regions where PAC is provided to more than 6,500 Ethiopian women each year. Analyses based on data collected in 2000 (pre-intervention) and 2004 (post-intervention) were performed to answer the following research questions: 1. How did services at all 119 facilities compare between 2000 and 2004? 2. How did the intervention affect availability and quality of PAC services between 2000 and 2004 between the 42 intervention facilities and the 77 comparison facilities? 3. How did the quality and availability of postabortion care change between 2000 and 2004 among the 42 intervention facilities?

Thiam, F. T. and S. Suh (2006). Scaling-up postabortion care services: Results from 23 health districts in Senegal. PAC In Action, Management Sciences for Health.

In Senegal, operations research (OR) has served as a major advocacy tool for postabortion care (PAC) since the late 1990s. The scale-up of PAC in Senegal began with a pilot project initiated by the Ministry of Health (MOH) of Senegal in 1997-1998 to assess the feasibility, acceptability and efficiency of implementing the original PAC model in two hospitals in Dakar and a district health center. The study showed that nearly 97% of abortion cases were treated with digital curettage or dilation and curettage (D&C) and only 18% of patients received information about contraception after treatment.

Thiam, F. T., S. Suh, et al. (2006). Scaling up postabortion care services: Results from Senegal, Management Sciences for Health.

Senegal has recently emerged as a leader in West Africa in the extension of postabortion care (PAC). This paper describes the extension of PAC to the district level in Senegal, where complications of abortion continue to claim too many women's lives. Between November 2003 and June 2005, Management Sciences for Health introduced PAC services in 23 districts covering more than half the population of Senegal. The availability of PAC rapidly increased in both health centers and health posts. The proportion of health centers with a provider trained in PAC and that offered PAC services increased from 39% in 2003 to 100% in 2005. In 300 health posts, the proportion increased from 0% in 2003 to 72% in 2006. The number of women who sought treatment for an incomplete abortion at a health center more than doubled between 2003 and 2005. The availability of PAC services in the 23 health centers probably contributed to this increase, as did community education efforts. The proportion of women with incomplete

abortions who received counseling before leaving a facility increased from 36% in 2003–04 to 82% in 2005. Of those who received counseling, the proportion leaving a facility with a family planning method rose almost fourfold in two years, from 15% in 2003 to 56% in 2005.

Varkey, L. C., A. Mishra, et al. (2004). Involving men in maternity care in India. New Delhi, Frontiers in Reproductive Health Program, Population Council.

The Men in Maternity (MiM) study investigated the feasibility, acceptability and cost of a new, more comprehensive, model of maternity care that encouraged husbands' participation in their wives' antenatal and postpartum care. The study specifically assessed the impact of the intervention on family planning in the postpartum period and STI preventive practices among men and women. The study was conducted in collaboration with the Employees' State Insurance Corporation (ESIC), Delhi Directorate at their primary health facilities called dispensaries.

Wanjiru, M., I. Askew, et al. (2007). Assessing the feasibility, acceptability, and cost of introducing postabortion care in health centres and dispensaries in rural Tanzania: Final report, USAID's EngenderHealth ACQUIRE Project, Population Council's FRONTIERS in Reproductive Health Program.

The EngenderHealth ACQUIRE Project has been supporting the Tanzanian Ministry of Health (MOH) since early 2005 to decentralise the management of Post Abortion Care (PAC) services to Primary Health Care facilities (health centres and dispensaries), with the intention of bringing services closer to women who are unable to access them at district hospitals. The decentralised service has been pilot tested in one district, Geita District in Mwanza Province, northern Tanzania, to provide the Ministry with experience and operational information before it expands decentralization to the rest of the country. The pilot project was introduced by ACQUIRE in eleven health facilities (seven health centres and four dispensaries) in May 2005. In November 2005, the Population Council FRONTIERS Program began documenting the process of decentralising PAC and prospectively assessing its feasibility, effectiveness and cost. FRONTIERS collected data in selected pilot sites at two points in time; November 2005, the findings from which were provided to the MOH and ACQUIRE to address issues arising from introduction of the intervention; and in September 2006, to assess the feasibility, cost and effectiveness of the intervention. The specific objectives of this evaluation were to: Document the process of introducing and implementing the package in health centres; Assess changes in provider knowledge, attitudes and practices in the management of miscarriage and abortion complications that can be attributed to the training; Describe experiences of postabortion clients and their perceptions of the new service; Document changes in community attitudes and knowledge about abortion complications following introduction of the services, and the acceptability of local facilities offering PAC services; Examine the kinds of referral networks put in place by the intervention, and document their effectiveness and, Establish the additional resources that would be required by the MOH to support introduction of PAC services.

Warren, C., S. Phafoli, et al. (2008). Extending prevention of mother-to-child transmission through postpartum family planning in Lesotho, *Frontiers in Reproductive Health*, Family Health Department, Ministry of Health and Social Welfare, Lesotho.

In Lesotho, only 28 percent of new mothers receive a checkup after delivery (LDHS 2004). The prevention of future unintended pregnancies as a strategy and fundamental component of PMTCT programs has not received much attention to date, and is the focus of this project. This study has a specific focus on strengthening linkages with existing PMTCT follow up services and family planning services during the postpartum period by changing the number, timing and content of postpartum consultations that a woman and her newborn should receive. The objectives of the study were: 1) to develop and introduce a strengthened postpartum care package with three consultations within 48 hours, one week and six weeks; and 2) to document the feasibility and quality of care of the strengthened postpartum care package, and its acceptability to providers and postpartum women.

Warren, C., R. Shongwe, et al. (2008). Repositioning postnatal care in a high HIV environment: Swaziland. Washington DC, Swaziland Ministry of Health and Social Welfare, Horizons Program/Population Council, Elizabeth Glaser Pediatric AIDS Foundation, BASICS.

Recognizing the need to improve the care and follow up of mothers and infants in the postnatal period, the Swaziland Ministry of Health and Social Welfare (MOHSW), with support from the Horizons Program of Population Council, the Elizabeth Glaser Pediatric AIDS Foundation (EGPAF), Basics Support for Institutionalising Child Survival (BASICS), and the Central Statistics Office (CSO), carried out an operations research project to reposition postnatal care (PNC) within the context of a high HIV environment. The objectives of the study were to determine if changes to the sexual and reproductive health guidelines on postnatal care would result in the timely and quality provision of key components of essential maternal and newborn care in the postnatal period, increase utilization of postnatal care services among all postpartum (PP) women, and improve the care and follow up of HIV-positive postpartum women and their infants.

Wickstrom, J., N. Russell, et al. (2008). Engaging communities as partners in postabortion care: A desk review of the Community Postabortion Care Project in Nakuru, Kenya. New York, USAID's ACQUIRE Project/EngenderHealth.

In 2005, the ACQUIRE Project received support from the U.S. Agency for International Development (USAID)/Washington PAC Working Group to replicate a community-based project from Bolivia for the Kenya context to test approaches to community mobilization for PAC. ACQUIRE staff from New York and Kenya, and our partner the Society for Women and AIDS in Kenya (SWAK), worked to design a project using the Community Action Cycle process to improve community participation and ultimately meet the PAC needs of local women and couples in Nakuru, Kenya. Addressing unsafe abortion is important in Kenya, where an estimated 300,000 abortions are performed each year, with 20,000

women being admitted with abortion-related complications to public hospitals annually. This translates into a daily abortion rate of more than 800 procedures and 2,600 abortion-related deaths every year (KMA, FIDA-K, KMOH, & Ipas, 2004). The project was implemented to build community confidence and to give community members the tools to help themselves make positive changes in their environment. The goal was to increase access to reproductive health (RH) and FP services, especially PAC. Community mobilization had a substantial impact on the local environment and on health service delivery. Communities were engaged, and resources were found at the local level to implement activities that the communities decided were important to them.

Youssef, H., N. Abdel-Tawab, et al. (2007). Linking family planning with postabortion services in Egypt: Testing the feasibility, acceptability and effectiveness of two models of integration, Population Council FRONTIERS in Reproductive Health program, Family Health International, TAHSEEN/ Catalyst Project, USAID.

Effective linkage between postabortion evacuation services and family planning is essential to reduce the incidence of repeat unwanted pregnancy and unsafe abortion. This collaborative operations research study between FRONTIERS Program, TAHSEEN/ Catalyst Project, and the Egyptian Ministry of Health and Population (MOHP), with funds from USAID, was undertaken to test the feasibility, acceptability, and effectiveness of two models of integrating family planning services with postabortion services. The first model involves provision of family planning counseling to postabortion patients and referral to a clinic near their residence to receive a method. The second model involves, in addition, offering family planning methods to postabortion patients who are interested in immediate initiation of contraception.

5.5. Annotated bibliography of excluded studies

Excluded articles – MNCHN education-only (N=2)

These studies were excluded because the MNCHN component of the intervention consisted of education only; no MNCHN services were offered.

Parwej, S., R. Kumar, et al. (2005). "Reproductive health education intervention trial." Indian J Pediatr **72**(4): 287-91.

OBJECTIVE: To measure the effectiveness of a reproductive health education package in improving the knowledge of adolescent girls aged 15-19 years in Chandigarh (India). **METHODS:** A reproductive health education package, developed in consultation with parents, teachers and adolescents, was delivered to randomly sampled classes of two senior secondary schools and one school was selected as control. In one school, a nurse conducted 15 sessions for 94 students in three batches using conventional education approach. In another school she conducted sessions for a selected group of 20 adolescents who later disseminated the messages informally to their 84 classmates (peer education). Using a 70-item structured questionnaire the knowledge of 95 adolescents from conventional, 84 from peer, and 94 from control school were assessed before and one month after the last session. Change in the score in intervention and control groups was tested by ANOVA taking age and socio-economic status as covariates. **RESULTS:** Teachers, parents and students overwhelmingly (88%, 95.5% and 93% respectively) favoured reproductive health education program. Five percent of the respondents reported that someone in their class is having sexual relations, and 13% of the girls approved of pre-marital sexual relations. Reproductive health knowledge scores improved significantly after intervention in conventional education (27.28) and peer education group (20.77) in comparison to the controls (3.64). Post-test scores were not significantly different between peer education group and conventional education group (43.65 and 40.52 respectively) though the time consumed in delivering the peer education intervention was almost one third of the time taken to implement conventional education. **CONCLUSION:** Peer education and conventional education strategies were effective in improving the reproductive health knowledge of adolescent girls but peer strategy was less time consuming.

Tang, S. Y., L. C. Tian, et al. (2009). "Improving Reproductive Health Knowledge in Rural China A Web-Based Strategy." Journal of Health Communication **14**(7): 690-714. In China, one of the major problems in upgrading rural health services is the difficulty of communicating between the rural and urban areas. Enabling local agencies to access the Internet in resource-poor areas can provide an efficient means of diffusing current training and information and will have far-reaching policy implications. To test the feasibility of using the Internet to deliver needed health information to the countryside, the UCLA School of Public Health and the Institute of Health Studies of Kunming Medical College (IHS-KMC) collaborated in an experimental website project to improve the quality of reproductive health services to promote women's health in three rural counties of Yunnan. The project

involved the county government and the Bureau of Public Health, the Bureau of Family Planning; the Bureau of Education, Women's Federation, and the Maternal and Child Health Station targeting village health workers and teachers; women's cadres. Three counties, matched on socioeconomic status, participated in the study and were randomized to receive three programs. Nanhua County received computer skill training and logistic support including a planning workshop for information diffusion. Mouding County received computers only. Dayao, the control county, did not receive the full program until the conclusion of the project. The study demonstrated that the use of a website to disseminate health information in remote rural areas is not only feasible but that it also will be enthusiastically adopted by local health workers and interested parties. Moreover, the knowledge was diffused from the primary population of village doctors, family planning workers, women's cadres, and teachers to the secondary population of villagers and students.

Excluded articles – Population linkages (N=18)

These studies were excluded because services of one type (FP or MNCHN) were offered to clients of the other type, yet clients did not receive both types of services. For example, if family planning was offered to postnatal women, but no postnatal services were offered, then this was a population linkage and therefore was excluded from the review. In order to be included in the review, both FP and MNCHN services had to be offered as part of the intervention.

Balkus, J., R. Bosire, et al. (2007). "High uptake of postpartum hormonal contraception among HIV-1-seropositive women in Kenya." *Sex Transm Dis* **34**(1): 25-9.

OBJECTIVES: The objectives of this study were to determine patterns of contraceptive utilization among sexually active HIV-1-seropositive women postpartum and to identify correlates of hormonal contraception uptake. **GOAL:** The goal of this study was to improve delivery of family planning services to HIV-1-infected women in resource-limited settings. **STUDY DESIGN:** HIV-1-infected pregnant women were followed prospectively in a perinatal HIV-1 transmission study. Participants were referred to local clinics for contraceptive counseling and management. **RESULTS:** Among 319 HIV-1-infected women, median time to sexual activity postpartum was 2 months and 231 (72%) women used hormonal contraception for at least 2 months during follow-up, initiating use at approximately 3 months postpartum (range, 1-11 months). Overall, 101 (44%) used DMPA, 71 (31%) oral contraception, and 59 (25%) switched methods during follow-up. Partner notification, infant mortality, and condom use were similar between those using and not using contraception. **CONCLUSIONS:** Using existing the healthcare infrastructure, it is possible to achieve high levels of postpartum hormonal contraceptive utilization among HIV-1-seropositive women.

Ceylan, A., M. Ertem, et al. (2009). "Post abortion family planning counseling as a tool to increase contraception use." *BMC Public Health* **9**: 20.

BACKGROUND: To describe the impact of the post-abortion family planning counseling in bringing about the contraceptive usage in women who had induced

abortion in a family planning clinic. **METHOD:** The Diyarbakir Office of Turkish Family Planning Association (DTFPA) is a nonprofit and nongovernmental organization which runs a family planning clinic to serve the lower socio-economic populations, in Diyarbakir-Turkey. Post abortion counseling is introduced by using proper communication skills and with using appropriate methods to women. In this study we introduced contraceptive usage of women who had induced abortion one year ago and followed by DTFPA's clinic. **RESULTS:** 55.3% of our clients were not using contraceptive methods before abortion. At the end of the one year, 75.9% of our followed-up clients revealed that they were using one of the modern contraceptive methods. There was no woman with IUD before induced abortion. At the end of one year 124 (52.3%) women had IUD. "A modern method was introduced immediately after abortion" was the most important factor increasing modern method usage. **CONCLUSION:** Our results advocate that post-abortion counseling may be an effective tool to increase the usage of contraceptives. Improved and more qualified post-abortion family planning counseling should be an integral part of abortion services.

Dhont, N., G. F. Ndayisaba, et al. (2009). "Improved access increases postpartum uptake of contraceptive implants among HIV-positive women in Rwanda." Eur J Contracept Reprod Health Care **14**(6): 420-5.

BACKGROUND: Long-acting reversible contraceptives (LARCs) and sterilisation are the most cost-effective methods of contraception but are rarely used in sub-Saharan Africa partly due to limited access. **STUDY DESIGN:** HIV-positive pregnant women attending two urban clinics in Rwanda were followed prospectively in a perinatal HIV transmission cohort study. Women attending one clinic were referred to public family planning (FP) services for all contraceptive methods (Site A) and women attending the other clinic (Site B) were offered implants and intrauterine devices (IUDs) on-site. **RESULTS:** Fifty three percent of the pregnant women reported an intention to use a LARC or to be sterilised after delivery. The uptake of implants was significantly higher at Site B (38%) than at Site A (6%). The IUD uptake was extremely low at both sites (2%). Twenty-eight of the 39 women at Site B who had intended to start using a LARC actually did so as compared to only one of 23 at Site A. **CONCLUSION:** When access to LARC was provided, a substantial number of HIV-positive women started using hormonal implants, but not IUDs, in the postpartum period. HIV and FP services should consider improving access to implants to reduce the number of unintended pregnancies.

Diaz, S., R. Aravena, et al. (1991). "Contraceptive efficacy of lactational amenorrhea in urban Chilean women." Contraception **43**(4): 335-52.

The contraceptive efficacy of breastfeeding was assessed in 236 healthy urban women who were followed at monthly intervals during the first postpartum year. Proportional hazard models were used to evaluate the influence of time postpartum, menstrual status and breastfeeding pattern upon the risk of pregnancy. Time and menstrual status had a highly significant effect on this risk. Those women who remained in amenorrhea had cumulative probabilities of

pregnancy of 0.9% and 17% at 6 and 12 months postpartum, respectively. In those who recovered menstrual cycles, the risk rose to 36% and 55% at 6 and 12 months, respectively. Milk supplementation also increased significantly the risk when considered alone but not when time and/or menstrual status were included in the analysis. However, amenorrheic women who introduced bottle feeding, had a higher risk of pregnancy after 6 months postpartum than those who remained fully nursing. The analysis was unable to detect a significant influence of the nursing frequency. The results confirm that lactational amenorrhea is an effective contraceptive during the first six months postpartum. The first postpartum bleeding marks a great increase in the risk of pregnancy. Supplementation also increases the risk, particularly in amenorrheic women.

Diaz, S., H. Cardenas, et al. (1991). "Early difference in the endocrine profile of long and short lactational amenorrhea." *J Clin Endocrinol Metab* **72**(1): 196-201.

The endocrine profiles associated with long and short lactational amenorrhea were assessed in a longitudinal study in which morning blood samples were drawn in 48 women from the first postpartum month until the recovery of ovulation and in a cross-sectional study in which the samples were drawn throughout 24 h at the end of the third postpartum month in 10 fully nursing and amenorrheic women. PRL, LH, FSH, estradiol (E2), progesterone, cortisol, and dehydroepiandrosterone sulfate were measured. In both studies we detected a smaller PRL increase in response to suckling (P less than 0.001) and higher E2 levels (P less than 0.001) in nursing women who ovulated within 6 months postpartum compared to those in women who did not. Such differences were observed early after delivery when all women were fully nursing and amenorrheic. These results suggest some probable sources of variability in the duration of lactational amenorrhea in our population. The greater PRL response to suckling associated with longer amenorrhea may be due to higher sensitivity of the breast-hypothalamus-pituitary system or a stronger suckling stimulus in this group. Differences in plasma E2 levels between longer and shorter periods of amenorrhea may reflect dissimilar endogenous production, intake, or clearance of estrogens.

Egbuonu, I., C. C. Ezechukwu, et al. (2005). "Breast-feeding, return of menses, sexual activity and contraceptive practices among mothers in the first six months of lactation in Onitsha, South Eastern Nigeria." *J Obstet Gynaecol* **25**(5): 500-3.

The objective of this study was to determine the exclusive breast-feeding practices, return of menstruation, sexual activity and contraceptive practices among breast-feeding mothers in the first six months of lactation. The study was based in Onitsha, South Eastern Nigeria. A structured questionnaire was used to obtain data from breast-feeding mothers on their age, educational attainment, breast-feeding practices, return of menstruation, sexual activity and contraceptive practices within the first six months of lactation at intervals of 6 weeks, 10 weeks 14 weeks and 6 months post delivery. Analysis of the information obtained showed that out of the 178 mothers who participated in the study 81% of the mothers were within the ages of 20 - 34 years. While all the mothers had formal education, the majority (59%) had secondary education. Seventy-three percent

initiated breast-feeding within one hour of delivery. On discharge from hospital, all of them had already established breast-feeding which continued up to six weeks and dropped to 97.8% at six months. Exclusive breast-feeding which was practised by 100% on discharge dropped to 3.9% at six months. The feeding regimen was on demand as practised by 98.9% of the mothers. Menstrual flow had returned in 33.8% of the mothers by 6 weeks of lactation, and had risen to 70.2% at six months. There was more prolonged lactational amenorrhea in exclusively breast-feeding mothers than in those who were not. By 6 weeks post delivery 31.6% of the mothers had resumed sexual activity and this rose to 93.6% at six months. With the resumption of sexual activity only 5% of the mothers resorted to contraceptive practices other than lactational amenorrhea and this increased to 54% at six months. There was no pregnancy in any of these women during the six months period. While appreciating the role of lactational amenorrhea in child spacing and considering the early return of sexual activity among the mothers the practice of introducing contraceptive practices needs to be encouraged especially in women whose menstruation has returned.

Gilliam, M. L., N. Zite, et al. (2005). "Postpartum contraceptive use among women who did not undergo desired postpartum sterilization." Contraception **72**: 240.

Introduction: This pilot study explores patterns of postpartum contraceptive use among women who expressed desire but did not obtain postpartum sterilization.

Materials and Methods: We conducted interviews with women who desired postpartum sterilization and did not undergo the procedure, and age-matched controls (women not desiring sterilization). Semistructured interviews were conducted at delivery, 6 weeks and 6 months postpartum. Descriptive statistics and Mann–Whitney U test and qualitative methods were used for analysis.

Results: Thirty-four women who had expressed desire for postpartum sterilization were recruited along with 29 age-matched controls. Our sample was 83% African American, 11% Latino and 4% white. At baseline, women in both groups felt that they had received adequate antepartum contraceptive counseling. Eleven women in the sterilization group had requested it in a previous pregnancy. At 6-month follow-up, of women requesting sterilization 5 had undergone the procedure. The majority of women in this group were using depot medroxyprogesterone acetate (DMPA) or nothing. Many expressed concerns about DMPA side effects.

Discussion: At follow-up, many women used DMPA or nothing at all; few women obtained postpartum sterilization. The majority of women who did not request sterilization used the IUD. Conclusion: Longitudinal follow-up of women who express desire for sterilization, but do not undergo the procedure, demonstrates that some use long-acting hormonal methods, but many are at risk for repeat pregnancy.

Kazi, A., K. I. Kennedy, et al. (1995). "Effectiveness of the lactational amenorrhea method in Pakistan." Fertil Steril **64**(4): 717-23.

OBJECTIVE: To determine the efficacy of the lactational amenorrhea method of family planning (amenorrhea during full or nearly full breastfeeding for 6 months postpartum). DESIGN: Prospective noncomparative study. SETTING: Normal

breastfeeding women in Karachi and Multan, Pakistan, most delivered at home by a midwife. PATIENTS: Three hundred ninety-nine newly delivered mothers who successfully had breastfed a previous child and chose the lactational amenorrhea method to prevent a subsequent pregnancy, 391 of whom were followed for a full year. INTERVENTIONS: Mothers were taught, before or shortly after delivery, to use the method and were interviewed in their homes each month by a Lady Health Visitor. MAIN OUTCOME MEASURE: Life-table pregnancy rates. Periods of postpartum or lactational abstinence were excluded in the calculation of the pregnancy rates. RESULTS: During full or nearly full breastfeeding, while the women were amenorrheic and not otherwise contracepting, the rate of pregnancy was 0.6%. The pregnancy rate during lactational amenorrhea alone was 1.1% at 1 year postpartum. CONCLUSION: The lactational amenorrhea method was found to be highly effective for 6 months. A high degree of contraceptive protection endures for a full year during lactational amenorrhea, but not after the return of menses during breastfeeding.

Khan, M. E., M. P. Sebastian, et al. Promoting healthy timing and spacing of births in India through a community-based approach, FRONTIERS program, Population Council. The Indian Family Welfare Program, though successful in increasing contraceptive use among couples who have achieved their desired family size, has failed in educating people about the importance and need of using contraceptive methods for spacing births. The concept of inter-pregnancy spacing and its advantages was never given serious attention as a program objective. The latest National Family Health Survey (NFHS) results show that 77 percent of sterilized women did not use a family planning method before their sterilization (IIPS and Marco International 2007). Furthermore, available studies demonstrate that a birth interval of 3 to 5 years could increase chances of infant and maternal survival by 2.5 times more than children born at an interval of 2 years or fewer. Thus, Healthy Timing and Spacing of Pregnancy (HTSP) is considered an important family planning intervention to improve maternal and child health. Keeping this in view, the Department of Health & Family Welfare, Government of Uttar Pradesh, the Integrated Child Development Services (ICDS), Department of Women & Child Development, Uttar Pradesh, the Lala Lajpat Rai Memorial Medical College, Meerut, Uttar Pradesh, the Department of Economics, Jamia Milia Islamia University, Delhi, and the Population Council's Frontiers in Reproductive Health Program (FRONTIERS), Population Council undertook a study to test a model to increase use of postpartum contraception among young pregnant women with a parity of 0 or 1. The specific objectives were to (a) test a comprehensive Behavior Change Communication (BCC) model for its effectiveness to educate young couples and community members about healthy spacing and its advantages; and (b) increase the use of Lactational Amenorrhea Method (LAM) and postpartum contraception to expand the interval between pregnancies.

Perez, A., M. H. Labbok, et al. (1992). "Clinical study of the lactational amenorrhoea method for family planning." *Lancet* **339**(8799): 968-70.

The effect of breastfeeding on fertility is well known; however, its use as a method of family planning was, until recently, untested. In 1988, the Bellagio Consensus Conference proposed guidelines that became the basis for a method of family planning called the lactational amenorrhoea method (LAM). The principle of LAM is that a woman who continues to fully or nearly fully breastfeed her infant and who remains amenorrhoeic during the first 6 months postpartum is protected from pregnancy during that time. We have assessed this method in the context of a breastfeeding support intervention study of 422 middle-class women in urban Santiago, Chile. The cumulative 6-month life-table pregnancy rate was 0.45% among women who relied on LAM as their only family planning method (1 woman pregnant in month 6). The findings indicate that LAM, with its high acceptance and efficacy, is a viable method of family planning and can safely serve as an introductory method for breastfeeding women.

Potter, J. E., I. H. O. Perpetuo, et al. (2003). "Frustrated demand for postpartum female sterilization in Brazil." *Contraception* **67**: 385-390.

During the last three decades, Brazilians have relied almost exclusively on two contraceptive methods, the pill and female sterilization, with sterilization use increasing over time. Until a new law was passed in 1997, sterilization was virtually illegal and not covered by either public or private health insurance. It was, however, frequently provided in public and private hospitals in conjunction with a cesarean section. The new law regulating sterilization provided for reimbursement for interval sterilizations by public health insurance, but placed restrictions on availability intended to reduce the use of cesareans. These restrictions included the prohibition of postpartum sterilizations. This paper focuses on women's sterilization intentions during pregnancy and their experiences postpartum. In a prospective study of 1612 pregnant women carried out in four Brazilian cities, there was substantial demand for postpartum sterilization in both the private and public sectors among women who wanted no more children. However, public patients were much less likely to be sterilized than private patients. Thus, the new law may not have reduced inequities in access or, paradoxically, the incentive for unnecessary cesarean sections.

Ramos, R., K. I. Kennedy, et al. (1996). "Effectiveness of lactational amenorrhoea in prevention of pregnancy in Manila, the Philippines: non-comparative prospective trial." *BMJ* **313**(7062): 909-12.

OBJECTIVE: To determine the contraceptive efficacy of the lactational amenorrhoea method. **DESIGN:** Non-comparative prospective trial. **SETTING:** Urban Manila, the Philippines. **SUBJECTS:** 485 lower income, educated women with extensive experience of breast feeding. **INTERVENTION:** Women were offered all available contraceptives for use after birth. Those who chose the lactational amenorrhoea method were taught the method, screened for the study, and followed for 12 months to determine the risk of pregnancy when the method was used. **MAIN OUTCOME MEASURES:** Life table pregnancy rates during correct and incorrect use of the method, censored monthly in the event of sexual abstinence or the use of another contraceptive method. **RESULTS:** The lactational

amenorrhoea method was 99% effective when used correctly (that is, during lactational amenorrhoea and full or nearly full breast feeding for up to six months). At 12 months the effectiveness during amenorrhoea dropped to 97%. CONCLUSIONS: The lactational amenorrhoea method provided as much protection from pregnancy as non-breast feeding women experience with non-medicated intrauterine devices and barrier methods. The contraceptive effect of lactation cannot be attributed to lactational or postpartum abstinence.

Ravera, M., C. Ravera, et al. (1995). "A study of breastfeeding and the return of menses in Hoima District, Uganda." East Afr Med J **72**(3): 147-9.

The effect of breastfeeding on reestablishment of ovulation and fertility and on birth spacing are now well known. A study was conducted on lactational amenorrhoea (LAM) at 180 days in Hoima District, Uganda in order to understand whether and how LAM could be applied in fertility control and birth spacing. Since the introduction of supplementary food by Ugandan women does not replace or substitute for breastfeeding, a study was designed to determine if LAM was effective irrespective of supplementation of infant's diet. One hundred and fifty four mother/child pairs were entered into the study and 134 women completed the sixth month of the study. At the end of the period, eighty four women (62.7%) were amenorrhoeic of whom only 33 (39.3%) were exclusively breastfeeding and no woman had dropped out of the study because of pregnancy or the use of other family planning methods other than LAM. The study confirmed that LAM could be applicable in Uganda to the majority of the breastfeeding women (62.7%). It is expected that if health workers increase the intensity of breastfeeding support as well as the women's knowledge and motivation to use LAM for family planning, this would contribute to children's health as well as to birth spacing that is one of the major factors related to infant deaths. According to data from this study, the return of menses is irrespective of whether supplements have been introduced and their frequency.

Rodriguez, G. and S. Diaz (1993). Breast feeding and the length of postpartum amenorrhea: A hazards model approach. Biomedical and demographic determinants of reproduction. R. Gray, H. Leridon and A. Spira. New York, Clarendon Press/ Oxford University Press: 413-427.

The influence of the breastfeeding pattern and several clinical variables upon the duration of postpartum amenorrhea was assessed in a group of healthy women selected for having had a normal pregnancy and delivery and being highly motivated for prolonged breastfeeding on demand. 676 women who were fully nursing at the second month postpartum entered the study. Supplements were administered to 11% and 48% of the infants by the end of the 3rd and 6th month, respectively. The first bleeding was experienced before the end of the sixth month postpartum by 57% of the cases. Supplementation had a strong negative influence while nursing frequency had a significant positive influence upon the length of amenorrhea. Notwithstanding, a frequency of 8 + suckling episodes per 24 h could not maintain amenorrhea in around half of the subjects. Age and parity had a moderate negative influence upon the risk of experiencing the first postpartum

bleeding. Maternal weight and ponderal index, infant sex, birth weight and growth rate showed no significant influence upon the length of amenorrhea. In this urban population selected for having the highest motivation and best breastfeeding performance, the association of breastfeeding with amenorrhea was weak in comparison with what has been described for other populations. The risk of experiencing the first bleeding was reduced while fully breastfeeding with a high number of nursing episodes per day and night, particularly in older women with higher parity. But even in such situation 25% and 50% of the women had started to cycle by the end of the fifth and eighth postpartum month.

Schreiber, C. A., S. J. Ratcliffe, et al. (2010). "A randomized controlled trial of the effect of advanced supply of emergency contraception in postpartum teens: a feasibility study." Contraception **81**: 435-440.

BACKGROUND: The study was conducted to test the feasibility of conducting a randomized controlled contraceptive trial in postpartum teens and to assess whether postpartum advanced supply of emergency contraception (EC) to teenaged mothers helps to prevent repeat pregnancies of close proximity. **STUDY DESIGN:** We performed a randomized controlled trial of 50 postpartum teens at an urban academic medical center. Participants in the intervention arm received routine postpartum contraceptive care and advanced supply of one pack of EC pills with unlimited supply thereafter upon request. The routine care arm (RCA) received routine postpartum contraceptive care. We asked open-ended questions about how we might maximize study retention and implemented the participants' requests in both arms. **RESULTS:** Our retention rate was 78%. There were three (13%) pregnancies out of 23 participants in the intervention arm and eight (30%) pregnancies out of 27 participants in the RCA. The risk of pregnancy occurring in the intervention arm was 0.57 times that of the RCA (95% CI 0.20-1.60; $p=.23$). **CONCLUSIONS:** A randomized controlled trial of postpartum teens to receive and not to receive advanced supply of EC is both feasible and necessary. Our study provides preliminary data to suggest that advanced supply of EC may help decrease repeat teen pregnancies.

Vikhlyaeva, E., E. Nikolaeva, et al. (2001). "Contraceptive use and family planning after labor in the European part of the Russian Federation: 2-year monitoring." European Journal of Contraception and Reproductive Health Care **6**(4): 219-226.

Objectives To explore the main determinants of the reproductive behavior of nursing mothers, all inhabitants of the central part of the European region of the Russian Federation, their use of modern contraceptive methods and their attitude to future family planning. **Methods** Open cohort multicenter study of 1200 nursing mothers aged 16-42 years interviewed at 3-5 days' postpartum, with subsequent longitudinal monitoring of the majority in the local family planning centers during the 2 years after labor. **Results** The main determinants of the reproductive behavior of this cohort of women are an early debut of sexual activity, several partners in their reproductive history, relatively early marriage with a motivation to have one child in their family and the tendency to use induced abortion as one of the methods of birth regulation. Our experience of

postpartum counselling demonstrated positive changes in the women's attitudes to modern contraceptive methods. The data reveal that the induced abortion rate among 639 mothers regularly followed-up during the first year postpartum was 4.4%, and among 606 during the second year was 5.1%. The corresponding rates among 129 women who did not visit the family planning centers and who were only interviewed 2 years after labor were 9.3% and 8.5%, respectively. Conclusions Our data show that the unmet needs are remarkably concentrated among women who have given birth within the last year or two, and who need augmented attention from the family planning and reproductive health services.

Welkovic, S., L. O. B. F. Costa, et al. (2001). "Post-partum bleeding and infection after post-placental IUD insertion." *Contraception* **63**: 155-158.

The incidence of excessive bleeding and endometritis in 145 women who accepted post-placental insertion of a copper T380A intrauterine device (IUD) was compared with that of 157 subjects who did not accept the insertion of the IUD. The subjects delivered at the Maternidade da Encruzilhada, Recife, Brazil in the period from March 30, 1994, to December 15, 1995. A blood sample for hemoglobin was collected before placental expulsion and 10 days after labor. The IUD was inserted up to 10 min after the expulsion of the placenta. There was no difference between the groups in the incidence of excessive bleeding, neither regarding mean hemoglobin concentration before placental expulsion ($t = 0.039$; $p = 0.83$) nor at day 10 postpartum ($t = 1.04$; $p = 0.29$). There were 5 cases of clinically diagnosed endometritis among the 145 subjects with placental-IUD (3.4%) and 7 cases among the 157 women without IUD (4.6%) ($p = 0.40$). Post-placental insertion appears to be a convenient approach to IUD initiation, with no observed increase in the incidence of excessive bleeding or endometritis.

Wilder, J., R. Masilamani, et al. (2005). Promoting change in the reproductive behavior of youth: Pathfinder International's PRACHAR Project, Bihar, India, Pathfinder International.

In 2001, the David and Lucile Packard Foundation generously funded Pathfinder International to conduct a three-year project in Bihar, India, designed to significantly improve the reproductive behavior of adolescents and young adults. Called "Promoting Change in Reproductive Behavior in Bihar" (PRACHAR), the project took to scale successful approaches that had been developed in an earlier project funded by the Bill and Melinda Gates Foundation. PRACHAR was designed to reach a large proportion of the population in three districts of the state of Bihar and to change beliefs, attitudes, and practices among adolescents, young married couples, and parents and influential adult figures in these communities. PRACHAR's long-term goal was to improve the health and welfare of young mothers and their children by changing traditional customs of early childbearing. By delaying the first child until the woman is 21 years of age and spacing subsequent children by three to five years, communities could benefit from a significant drop in maternal and infant mortality rates, and from improvements in the survival and general health of mothers and children after later pregnancies.

Excluded articles – Not an organizational/management strategy with the aim of integrating services (N=22)

These studies were excluded because the intervention was not an organizational or management strategy with the aim of integrating services.

Abdel-Tawab, N., D. Huntington, et al. (1999). Effects of husband involvement on postabortion patients' recovery and use of contraception in Egypt. Postabortion Care: Lessons from Operations Research. D. Huntington and N. Piet-Pelon. New York, Population Council: 16-37.

Despite the documented role of husbands as decisionmakers in matters of reproductive health (Abdel-Aziz, El-Zanaty, and Cross 1992; Ali 1995), very little has been done to formally involve husbands in matters related to the health of their wives, particularly in relation to postabortion care. Current health services for postabortion patients seldom give any information to the patients themselves, let alone to their husbands. Studies that measure the effects of husbands' involvement have commonly been conducted in family planning settings. Moreover, most of the past research focused on a self-selected group of husbands who received counseling. Prior to the present study, it was not known in Egypt whether involving husbands would be feasible and acceptable, or whether it would have a positive impact on the health of their spouses. The study examines the effects of counseling the husbands of postabortion patients on husbands' level of involvement in their spouses' recovery and on patients' recovery and subsequent use of contraception.

Bawah, A. A. (2002). "Spousal communication and family planning behavior in Navrongo: A longitudinal assessment." Studies in Family Planning 33(2): 185-194.

The poor performance of most family planning programs in the 1980s, especially in sub-Saharan Africa, generated concern among researchers and led to a quest for explanations. In most countries, the alienation of men from participation in these programs was subsequently identified as one of the major causes, a finding that led researchers to redirect their attention to couples instead of individuals as the focus of such programs. Lack of spousal communication about family planning was identified as one reason for the low level of contraceptive use among women. Subsequent research has persistently demonstrated a positive relationship between spousal communication and contraceptive use. Most prior studies on this topic have been based on cross-sectional data, so that whether the identified relationship are causal remains unclear. Does communication, in fact, predict contraceptive use, or does the use of contraceptives generate communication among couples? This study addresses the question of causality by using longitudinal data from the Navrongo Health Research Centre panel survey. Results from both cross-sectional and longitudinal analysis demonstrate that spousal communication does, indeed, predict contraceptive behavior, even when other factors are controlled.

Becker, S., E. S. Bazant, et al. (2008). "Couples counseling at an abortion clinic: a pilot study." Contraception 78(5): 424-31.

BACKGROUND: Nearly half of all pregnancies in the United States (US) are unintended. Nonuse, incorrect or inconsistent use of contraception may be related to limited support of male partners. Partners often accompany women seeking abortions to the clinic, representing an opportunity for health providers to engage them. This pilot study estimates the proportion of abortion patients accompanied by a male partner, the proportion agreeing to couples counseling and describes couples' experiences with the counseling. **STUDY DESIGN:** At a Baltimore clinic providing abortion, after preliminary qualitative research we recorded the number of patients who came with partners and accepted couples counseling in a 3-month period and sought feedback on the couples counseling in questionnaires from women, partners and the counselor. The counseling session consisted of giving information about the procedure and counseling regarding choices of a post-abortion contraceptive method and related topics that the woman and/or partner might raise. **RESULTS:** Overall, 27% of 774 patients came with their male partner, 28% with someone else and 45% alone. Fewer African-Americans (23%) came with a male partner, compared to 35% each among Whites and Hispanics ($p < .001$). Among all couples, 42% ($n=88$) accepted couple counseling. Many women (77%) and partners (59%) completing questionnaires ($n=66$) had expected the partner to be involved in the clinic visit. The patients appreciated having the partner's support, having an informed partner with whom to communicate and being able to share decision making. **CONCLUSION:** Over a quarter of patients to an abortion clinic came with a partner without any advance notice of the availability of couple counseling, and a sizable minority of these couples accepted couple counseling. Those who had the counseling evaluated it favorably.

Charandabi, S. M., R. Vahidi, et al. (2010). "Effect of a peer-educational intervention on provider knowledge and reported performance in family planning services: a cluster randomized trial." *BMC Med Educ* **10**: 11.

BACKGROUND: Peer education is an interactive method of teaching or learning which is widely used for educating school and college students, in a variety of different forms. However, there are few studies on its effectiveness for in-service education. The aim of this study was to evaluate the effect of an educational programme including peer discussions, based on a needs assessment, on the providers' knowledge and reported performance in family planning services. **METHODS:** An educational programme was designed and applied in a random selection of half of in-charges of the 74 family health units (intervention group) in Tabriz at a regular monthly meeting. The other half constituted the control group. The programme included eight pages of written material and a two-hour, face-to-face discussion session with emphasis on the weak areas identified through a needs assessment questionnaire. The educated in-charges were requested to carry out a similar kind of programme with all peers at their health facilities within one month. All in-charges received one self-administered questionnaire containing knowledge questions one month after the in-charge education (follow-up I: 61 responses), and another one containing knowledge and self-reported performance questions 26 months later (follow-up II: 61 responses). Also, such tests were done for the peers facilitated by the in-charges one (105 responses) and 27 months (114

responses) after the peer discussions. Multiple linear regression was used for comparing mean total scores, and Chi square for comparing proportions between control and intervention groups, after defining facility as the unit of randomization. **RESULTS:** The mean total percentage scores of knowledge (percent of maximal possible score) in the intervention group were significantly higher than in the control group, both at follow-up I (63%) and at follow-up II (57%); with a difference of 16 (95% CI: 11, 22) and 5 (95% CI: 0.4, 11) percentage units, respectively. Only two of the nine reported performance items were significantly different among the non in-charges in the intervention group at follow-up II. **CONCLUSIONS:** The educational programme including peer discussions using existing opportunities with no need for additional absence from the workplace might be a useful complement to formal large group education for the providers.

Fine, P. M., J. Tryggstad, et al. (2007). "Safety and acceptability with the use of a contraceptive vaginal ring after surgical or medical abortion." *Contraception* **75**(5): 367-71.

OBJECTIVE: The study was conducted to determine if a contraceptive vaginal ring (CVR) is a safe and acceptable method of contraception when used in the proximate postabortion period following first-trimester surgical or medical abortion. **METHODS:** A CVR was inserted within 1 week following a medical or surgical abortion. Participants were followed up for 3 months to determine safety and acceptability. Safety was measured by the absence of signs of infection or serious adverse events. Acceptability was assessed by the CVR satisfaction survey, completed at the 3-month follow-up visit. **RESULTS:** Of 81 participants enrolled in the study, 69 (85%) completed the first-month follow-up visit, and 54 (67%) completed the final 3-month follow-up visit. There were no serious adverse events and no signs of infection on physical exam. Most adverse events were mild and not specifically related to the CVR. Related adverse events were those commonly associated with hormonal contraception use. Eighty-nine percent of participants chose to continue the CVR as their birth control method. **CONCLUSION:** The CVR is potentially safe and has high acceptability when used in the proximate postabortion period following a first-trimester abortion.

Gilliam, M. L., N. Zite, et al. (2005). "Postpartum contraceptive use among women who did not undergo desired postpartum sterilization." *Contraception* **72**: 240.

Introduction: This pilot study explores patterns of postpartum contraceptive use among women who expressed desire but did not obtain postpartum sterilization. **Materials and Methods:** We conducted interviews with women who desired postpartum sterilization and did not undergo the procedure, and age-matched controls (women not desiring sterilization). Semistructured interviews were conducted at delivery, 6 weeks and 6 months postpartum. Descriptive statistics and Mann–Whitney U test and qualitative methods were used for analysis. **Results:** Thirty-four women who had expressed desire for postpartum sterilization were recruited along with 29 age-matched controls. Our sample was 83% African American, 11% Latino and 4% white. At baseline, women in both groups felt that

they had received adequate antepartum contraceptive counseling. Eleven women in the sterilization group had requested it in a previous pregnancy. At 6-month follow-up, of women requesting sterilization 5 had undergone the procedure. The majority of women in this group were using depot medroxyprogesterone acetate (DMPA) or nothing. Many expressed concerns about DMPA side effects. Discussion: At follow-up, many women used DMPA or nothing at all; few women obtained postpartum sterilization. The majority of women who did not request sterilization used the IUD. Conclusion: Longitudinal follow-up of women who express desire for sterilization, but do not undergo the procedure, demonstrates that some use long-acting hormonal methods, but many are at risk for repeat pregnancy.

Graf, A. H., A. Staudach, et al. (1996). "An evaluation of the Filshie clip for postpartum sterilization in Austria." Contraception **54**(5): 309-11.

Voluntary sterilization is a popular method of family size limitation. Among other techniques for surgical induction of female sterility, the application of various kinds of clips to the Fallopian tubes has been introduced. The Filshie clips consist of rubber-lined titanium and their use for interval sterilization has been repeatedly published. So far, there are only a few reports regarding the use of Filshie clips during the postpartum period, when tubes are edematous and more friable. Therefore, 300 women voluntarily requesting postpartum surgical sterilization for the purpose of family size limitation were enrolled into a prospective trial. Within 72 h of delivery, 282 women were sterilized under general anesthesia using a subumbilical minilaparotomy approach and Filshie clip application. Of these women, 251 were available for follow-up examination at 6 weeks, 240 at 6 months, 234 at 12 months, and 209 at 24 months after the sterilization procedure. Complication rates were low, and there were no pregnancies during the follow-up period. These results indicate that the application of Filshie clips is a safe and efficacious method of surgical female sterilization in the postpartum period.

Main, B., T. Lower, et al. (2001). "Changes in ante-natal care and family planning in Krakor, Pursat, Cambodia, 1996-1998." Asia Pac J Public Health **13**(2): 74-8.

This study examines variations in ante-natal care (ANC) and family planning in Krakor, Pursat, Cambodia between 1996 and 1998. Population-based survey interviews were conducted with a total of 291 women in 1996 and 211 women in 1998. An intervention strategy designed to enhance the skills and roles of Health Centre staff, Village Health Volunteers (VHVs) and Traditional Birth Attendants (TBAs) was conducted. Over this timeframe, reported ANC access increased from 37% to 47%. Most women delivered their last child at home, usually assisted by a TBA. Few women practiced family planning, despite the fact that most reported that they did not want any further children. A range of reasons for not practicing family planning were found to be highly significant, including the lack of available services ($p < 0.01$). The fear of side-effects decreased significantly ($p < 0.01$), with the community education provided by the VHVs and TBAs, potentially being one contributing factor. The results of this study suggest that

continual support of VHV and TBAs will further improve the health of women in Cambodia.

Martin, C. W., A. H. Brown, et al. (1998). "A pilot study of the effect of methotrexate or combined oral contraceptive on bleeding patterns after induction of abortion with mifepristone and a prostaglandin pessary." *Contraception* **58**(2): 99-103.

Although a combination of mifepristone and a prostaglandin is a safe, acceptable alternative to vacuum aspiration for inducing abortion in early pregnancy, the longer period of vaginal bleeding after medical abortion is a disadvantage. The present study investigated whether administration of the combined oral contraceptive pill (COC) or the injection of methotrexate at the time of abortion would shorten the period of vaginal bleeding after medical abortion. After having a medical abortion induced with mifepristone (200 mg) and 0.5 mg gemeprost pessary, 80 women were randomized to four groups of 20 women each; Group A, COC; Group B, control; Group C, 50 mg/m² methotrexate; and Group D, placebo injection. There was no significant difference in the duration of bleeding between Groups A and B (median 14 and 17 days) or between Groups C and D (18 and 15 days), or in the amount of bleeding (4 days of heavy bleeding in each group). The first period occurred sooner in Group A who took the COC (median/range: 25/15-54 control group versus 32/16-46 days, $p < 0.04$). The administration of methotrexate was associated with a temporary elevation in liver enzyme concentration in one woman. It is concluded that women who wish to use COC can start immediately after medical abortion. Addition of methotrexate after abortion has no significant beneficial effect on patterns of bleeding and cannot be recommended.

Mullany, B. C., S. Becker, et al. (2007). "The impact of including husbands in antenatal health education services on maternal health practices in urban Nepal: Results from a randomized controlled trial." *Health Education Research* **22**(2): 166-176.

Observational studies suggest that including men in reproductive health interventions can enhance positive health outcomes. A randomized controlled trial was designed to test the impact of involving male partners in antenatal health education on maternal health care utilization and birth preparedness in urban Nepal. In total, 442 women seeking antenatal services during second trimester of pregnancy were randomized into three groups: women who received education with their husbands, women who received education alone and women who received no education. The education intervention consisted of two 35-min health education sessions. Women were followed until after delivery. Women who received education with husbands were more likely to attend a postpartum visit than women who received education alone [RR = 1.25, 95% CI = (1.01, 1.54)] or no education [RR = 1.29, 95% CI = (1.04, 1.60)]. Women who received education with their husbands were also nearly twice as likely as control group women to report making >3 birth preparations [RR = 1.99, 95% CI = (1.10, 3.59)]. Study groups were similar with respect to attending the recommended number of antenatal care checkups, delivering in a health institution or having a skilled provider at birth. These data provide evidence that educating pregnant women and

their male partners yields a greater net impact on maternal health behaviors compared with educating women alone.

Mullany, B. C., B. Lakhey, et al. (2009). "Impact of Husbands' Participation in Antenatal Health Education Services on Maternal Health Knowledge." Journal of Nepal Medical Association **48**(1): 28-34.

Introduction: A randomized controlled trial was designed to test the impact of involving husbands in antenatal health education on women's maternal health knowledge. Methods: Total 442 women receiving antenatal services at a hospital in Kathmandu, Nepal were randomized into three groups: women who attended education sessions with their husbands, women who attended education sessions alone, and women who attended no education sessions (controls). At baseline and after delivery, women's maternal health knowledge and change in knowledge levels were compared between the groups. Results: Compared to control group women, women educated with husbands increased their knowledge scores by an average of 0.61 points (95% CI=0.32-0.89, $P<0.001$), while women educated alone increased their scores by only 0.34 points (95% CI=0.04-0.65, $P<0.05$). Women educated with partners could identify more pregnancy complications and family planning methods than women in both other groups. Conclusions: These findings suggest that women learn and retain the most information when they are educated with their partners.

Nacar, M., A. Ozturk, et al. (2003). "The effect of family planning education given during postpartum period on the use of contraceptive methods ORIGINAL (NON-ENGLISH) TITLE Dogum sonrasi donemde verilen aile planlamasi egitiminin yontem kullanmaya etkisi." Erciyes Tip Dergisi **25**(3): 122-130.

Purpose: The aim of this study was to determine the effect of education given to women in postpartum period on the use of family planning methods. Material and Methods: This study was carried out between December 1999 and June 2000 in the State Maternity Hospital of Kayseri. A total of 300 postpartum women were randomly assigned to control (150 women) and intervention (150 women) groups. After a preliminary questionnaire was applied to women in both groups, an individual education about postpartum family planning was given to women in the intervention group and a brochure was distributed. Six months later, a final questionnaire about their use of methods was applied to women being 137 in the intervention group and 123 in the control group. Results: After the education, the rate of using any contraceptive methods rose from 62.0% to 88.3% in the intervention group and from 61.0% to 71.6% in the control group. While the rate of using modern contraceptive methods was 32.8% in the intervention group and 36.6% in the control group before education, this rate increased respectively to 21.9% and 4.0% after the education. Conclusion: We concluded that giving family planning education for women in early postpartum period increased the rate of using family planning methods.

O'Sullivan, A. L. and B. S. Jacobsen (1992). "A randomized trial of a health care program for first-time adolescent mothers and their infants." Nurs Res **41**(4): 210-5.

To test the effectiveness of a special health care program for adolescent mothers (17 years old or younger) and their infants, 243 mother-infant pairs were randomly assigned to one of two groups. All of the mothers were unwed, on Medicaid, and black. The control group received routine well-baby care. The experimental group received routine care and services that included rigorous follow-up, discussions with the mother about her plans for return to school and use of family planning methods, and extra health teaching. The dropout rate in the experimental group (60%) was significantly less after 18 months than the control group (82%). In spite of the high dropout rate, 91% of the mothers were located for the 18 month follow-up interview. The repeat pregnancy rate in the experimental group was 12% after 18 months, and 28% in the control group. There was no significant difference in the percentage returning to school. After 12 months, the infants in the experimental group were more likely to be fully immunized (33%) than the infants in the control group (18%). Mothers in the special care program who continued to attend clinic used the emergency room less than the mothers who continued to attend in the control group. These results suggest that a comprehensive health care program is one way to bring about better outcomes for both adolescent mothers and their infants.

Olds, D. L., J. Eckenrode, et al. (1997). "Long-term effects of home visitation on maternal life course and child abuse and neglect - Fifteen-year follow-up of a randomized trial." *Jama-Journal of the American Medical Association* **278**(8): 637-643.

Context.-Home-visitation services have been promoted as a means of improving maternal and child health and functioning. However, long-term effects have not been examined. Objective.-To examine the long-term effects of a program of prenatal and early childhood home visitation by nurses on women's life course and child abuse and neglect, Design.-Randomized trial. Setting.-Semirural community in New York. Participants.-Of 400 consecutive pregnant women with no previous live births enrolled, 324 participated in a follow-up study when their children were 15 years old. Intervention.-families received a mean of 9 home visits during pregnancy and 23 home visits from the child's birth through the second birthday. Data Sources and Measures.-Women's use of welfare and number of subsequent children were based on self-report; their arrests and convictions were based on self-report and archived data from New York State. Verified reports of child abuse and neglect were abstracted from state records. Main Results.-During the 15-year period after the birth of their first child, in contrast to women in the comparison group, women who were visited by nurses during pregnancy and infancy were identified as perpetrators of child abuse and neglect in 0.29 vs 0.54 verified reports ($P<.001$), Among women who were unmarried and from households of low socioeconomic status at initial enrollment, in contrast to those in the comparison group, nurse-visited women had 1.3 vs 1.6 subsequent births ($P=.02$), 65 vs 37 months between the birth of the first and a second child ($P=.001$), 60 vs 90 months' receiving Aid to Families With Dependent Children ($P=.005$), 0.41 vs 0.73 behavioral impairments due to use of alcohol and other drugs ($P=.03$), 0.18 vs 0.58 arrests by self-report ($P<.001$), and 0.16 vs 0.90 arrests disclosed by New York State records ($P<.001$). Conclusions.-

This program of prenatal and early childhood home visitation by nurses can reduce the number of subsequent pregnancies, the use of welfare, child abuse and neglect, and criminal behavior on the part of low-income, unmarried mothers for up to 15 years after the birth of the first child.

Pakarinen, P., J. Toivonen, et al. (2003). "Randomized comparison of levonorgestrel- and copper-releasing intrauterine systems immediately after abortion, with 5 years' follow-up." *Contraception* **68**(1): 31-4.

Women who seek an abortion are motivated to use contraceptive methods afterwards. Because the return of fertility after abortion is immediate, there is a need for effective and safe contraception promptly after the termination of pregnancy. A randomized trial of Mirena and NovaT intrauterine contraceptive devices inserted at the time of elective termination of pregnancy, duration no more than 12 weeks, is reported here. Women were randomized 2:1 resulting in 305 subjects with Mirena and 133 with NovaT as a segment of a larger study of 3000 women. In the Mirena group, two pregnancies at year 4 resulted in a final gross rate of 0.8 at 5 years, which was significantly ($p < 0.0004$) lower than the corresponding rate of 9.5 with NovaT. Terminations because of expulsion, bleeding problems, pain, pelvic inflammatory disease and other medical reasons were less common in the Mirena group, but not significantly different. The cumulative expulsion gross rate for NovaT at 5 years was 15.4 and for Mirena it was 10.5. Termination rates because of amenorrhea were low in both groups. It is concluded that both devices were well tolerated. Mirena was more effective and the rate of adverse events was lower than with NovaT. Special attention should be paid to the insertion procedure when carried out at the time of abortion.

RamaRao, S., E. Ottolenghi, et al. (2007). Assessment of the extension of postabortion care services in Senegal, Population Council, Centre for Training and Research in Reproductive Health (CEFOREP).

The Ministry of Health (MOH)-Senegal has systematically tested, introduced and scaled-up PAC since 1997 with the help of several national and international partners. Operations Research conducted by EngenderHealth demonstrated that it was feasible to extend PAC services to the primary health level by doctors and midwives. In 2003, Management Sciences for Health (MSH) was charged to assist the MOH to extend services to health centers and posts in its 5 focus regions. During 2000-2004, MSH was the holder of the Project for the Reduction of Maternal Mortality (PREMOMA) and PREMOMA's activities included postabortion care services. From November 2003 to June 2005, Management Sciences for Health (MSH) partnered with the MOH to extend PAC services in 23 Health Districts in the Regions of Kaolack, Louga, Thies, and Ziguinchor and, to a lesser extent, in Fatick. Five hundred and twenty-three providers from 23 health centers and 300 health posts were trained in PAC; all trainees were provided with equipment; a Management Information System (MIS) was developed and a new supervisory approach was installed.

Rasch, V., F. Yambesi, et al. (2006). "Post-abortion care and voluntary HIV counselling and testing - an example of integrating HIV prevention into reproductive health services." Tropical Medicine & International Health **11**(5): 697-704.

Objective: To assess the acceptance and outcome of voluntary HIV counselling and testing (VCT) among women who had an unsafe abortion. Method: 706 women were provided with post-abortion contraceptive service and offered VCT. We collected data on socioeconomic characteristics and contraceptive use and determined the HIV status of those who accepted VCT. Using a nested case-control design, we compared women who accepted HIV testing with women who did not. To study the association between socioeconomic factors, HIV testing acceptance and condom use in more detail, we did stratified analyses based on age and marital status. Results: 58% of the women who had an unsafe abortion accepted HIV testing. Women who earned an income were more likely to accept testing than housewives. Women who accepted testing were more likely to accept using a condom. The HIV prevalence rate was 19% among single women aged 20-24 years and 25% among single women aged 25-45 years. Conclusion: HIV testing and condoms were accepted by most women who had an unsafe abortion. The poor reproductive health of these women could be improved by good post-abortion care that includes contraceptive counselling, VCT and condom promotion.

Saeed, G. A., S. Fakhar, et al. (2008). "Change in trend of contraceptive uptake--effect of educational leaflets and counseling." Contraception **77**(5): 377-81.

BACKGROUND: The study was conducted to determine the impact of counseling and educational leaflets on contraceptive practices of couples. STUDY DESIGN: Randomization of 600 women was done in two groups matched for age, parity and socioeconomic status at the Department of Obstetrics and Gynaecology, Shifa Foundation Community Health Centre, Shifa International Hospital, Islamabad, Pakistan. In Group A, the intervention group was exposed to contraceptive counseling and educational leaflets in the postnatal ward after delivery, whereas in Group B, the nonintervention group was not given any formal contraceptive advice. Later on, both groups were assessed regarding their contraceptive practices. RESULTS: At their follow-up visit (8-12 weeks) postpartum, 19 (6.3%) women in the nonintervention group had started contraceptive use, whereas 153 (50.8%) had decided to start contraception in the next 6 months, and 129 (42.8%) women were still undecided. The main contraceptive user was the male partner (n=117, 38.8%), and the most common method used was coitus interruptus (n=62, 36.3%). In the intervention group, 170 women (56.9%) had started using contraceptives, whereas 129 (43.1%) had decided to start contraceptive use in the next 6 months. The predominant contraceptive user was the females (n=212-70.9%), and the most popular method chosen was oral contraceptive pills (n=111, 37.1%). CONCLUSION: There is a definite increase in contraceptive uptake in women provided with educational leaflets and counseling session with a shift toward use of more reliable contraceptive methods.

Shepard, D. S., R. N. Bail, et al. (2003). "Cost-effectiveness of USAID's regional program for family planning in West Africa." *Studies in Family Planning* **34**(2): 117-126.

Between 1994 and 1996, the United States Agency for International Development (USAID) closed 23 country missions worldwide, of which eight were in West and Central Africa. To preserve United States support for family planning and reproductive health in four countries in that region, USAID created a subregional program through a consortium of US-based groups that hired mainly African managers and African organizations. This study assesses cost-effectiveness of the program through an interrupted time-series design spanning the 1990s and compares cost-effectiveness in four similar countries in which mission-based programs continued. Key indicators include costs, contraceptive prevalence rates, and imputed "women-years of protection." The study found that, taking into account all external financing for population and family planning, the USAID West Africa regional approach generated women-years of protection at one-third the cost of the mission-based programs. This regional approach delivered family planning assistance in West Africa cost-effectively, and the findings suggest that regional models may work well for many health and population services in small countries.

Smith, K. B., Z. M. van der Spuy, et al. (2002). "Is postpartum contraceptive advice given antenatally of value?" *Contraception* **65**(3): 237-43.

In response to the concept that a good postpartum program should begin prenatally, this study was designed to determine whether the provision of expert contraceptive counseling during the antenatal period would have an impact on contraceptive uptake, patterns of contraceptive usage, and pregnancy rates during the first year after childbirth. Over 500 women attending antenatal clinics in each of three centers (Edinburgh, Scotland; Shanghai, People's Republic of China; Cape Town, South Africa) were randomized to receive expert contraceptive advice (participants, $n = 771$) or the standard advice routinely given in that setting (controls, $n = 866$). Follow-up was by postal or interviewer-administered questionnaires at 16 and 52 weeks after childbirth. There were no significant differences in the prevalence of contraceptive use at one year (over 79% in all centers) between participants and controls. In Edinburgh, participants were more likely to undergo sterilization ($p < 0.01$) than controls, otherwise there were no differences among Edinburgh, Shanghai, or Cape Town in either the methods of contraception chosen or in the methods used over time. Contraceptive counseling delivered antenatally appeared to have no impact on the pregnancy rate during the first year after childbirth. In Shanghai, over 11% of women in both groups underwent termination of pregnancy in the year of follow-up. In conclusion, although women in all centers said they found the opportunity to discuss contraception antenatally was useful, it had very little effect on contraceptive use or on subsequent pregnancy rates.

Thapa, S., J. Poudel, et al. (2004). "Triaging patients with post-abortion complications: A prospective study in Nepal." *Journal of Health Population and Nutrition* **22**(4): 383-398.

The first manual vacuum aspiration (MVA) services unit in Nepal was established in 1995 at the country's largest national maternity hospital in Kathmandu. This research sought to assess and evaluate the safety, acceptability, and effectiveness of MVA services. This prospective study was conducted during 12 months in 1998, and follow-up was made at six weeks. Two groups of patients were compared: 529 patients treated in the MVA unit and 236 patients who were clinically eligible for treatment in the MVA unit but were treated instead in the main operation theatre (OT) owing to the unavailability of services in the MVA unit during the hours of their admission. The two groups differed with respect to some of their background characteristics but were similar in their clinical characteristics. The MVA group received contraceptive counselling and services and had significantly shorter stays in hospital. However, the direct cost incurred by the patients, regardless of the type of facility they used, was about the same. Follow-up at six weeks revealed that the MVA patients had significantly fewer complaints and were generally more satisfied with the services they had received than their counterparts. Slightly more than half of the women in the MVA group were using contraception at the time of follow-up compared to no women in the OT group. It is concluded that the MVA unit provided safe, effective, and efficient services to about 50% of all the patients admitted to the hospital with post-abortion complications. An additional 25% of the post-abortion patients could be served if the unit were kept open 24 hours a day, saving resources and time for patients and hospital staff. As a parallel development, both MVA and main OT services would need to be more effectively integrated with outside antenatal and family-planning clinics to address the reproductive health needs of women, thereby reducing the number of patients requiring post-abortion care.

Truong, H. M., T. Kellogg, et al. (2006). "Contraceptive intentions among adolescents after abortion." *J Adolesc Health* **39**(2): 283-6.

Changes between choice of contraceptive methods before abortion and contraceptive intentions after abortion were assessed among 482 adolescents with regards to efficacy to prevent pregnancy or sexually transmitted diseases (STD) and human immunodeficiency virus (HIV). Adolescents substantially increased their intention to use oral contraceptives (214 of 452 who did not use before intended to after; $p < .001$) and depot-medroxyprogesterone acetate (DMPA) (121 of 469 who did not use before chose to after; $p < .001$). None of the 134 adolescents who used condoms as their primary contraceptive method before abortion intended to continue afterwards ($p < .001$). There was no difference in intention to use condoms after abortion among adolescents who received voluntary HIV counseling and testing compared to those who did not. Twenty-two percent of adolescents intended to use condoms together with spermicidal foam as their primary contraceptive method after abortion, thereby combining contraceptive efficacy with STD prevention. The intention to preferentially adopt hormonal methods as the primary contraceptive, especially among adolescents counseled and tested for HIV, is discouraging for STD and HIV prevention efforts in this adolescent population.