Two Approaches to Managing Vaginal Discharge Lead To Overtreatment, Missed Infections and Wasted Funds

Generally accepted clinical strategies for diagnosing reproductive tract infections may be relatively inaccurate in areas where the prevalence of infections is low, resulting in misdiagnosis and overtreatment. A study conducted in 1997 at five health centers in Matlab, Bangladesh, to evaluate the efficacy of two approaches used to identify infected women without having to perform expensive laboratory tests found that both approaches overestimated the prevalence of reproductive tract infection, classified uninfected women as possibly infected and missed most of the few women who had serious genital infections.[1] As a result, anywhere from 36% to 87% of recurrent funds expended to treat women on the basis of these approaches were wasted.

Because the laboratory tests needed to detect reproductive tract infections are expensive and may be difficult to perform under conditions in developing countries, syndromic management is often used to identify and treat women having a reproductive tract infection. This approach assumes that by asking a symptomatic client a few questions about her risk factors, a clinician can judge with a good degree of certainty whether she has an infection that needs treatment. Once women without infections are eliminated, presumptive treatment of the remainder is expected to eradicate most infections.

Researchers in Bangladesh set out to evaluate the accuracy of two algorithms for syndromic management of women complaining of abnormal vaginal discharge. Over a five-month period during 1997, all women in Matlab who visited a reproductive health center and complained of vaginal discharge or some related problem (such as genital itching, lower abdominal pain or pain during sex) were asked if they would participate in the study. All 465 symptomatic women agreed; they averaged 30.2 years of age, nearly all (97%) were married and most (94%) reported vaginal discharge.

In one approach, which was based on recommendations from the World Health Organization (WHO), health workers conducted a risk assessment for each client, noting the woman's personal characteristics and asking her about her sexual history and whether her partner had symptoms of an infection. If the woman's partner was symptomatic or if the woman herself had several risky characteristics, she was then treated for a broad range of potential cervical infections; if she did not meet these criteria, she was treated only for bacterial vaginosis and yeast infection.

The second approach involved visual inspection of the vagina: For each woman complaining of vaginal discharge, the health worker carried out a speculum examination, looking for visual signs of yeast, bacterial vaginosis, trichomonas, gonorrhea or chlamydia. Clients with signs of any of these infections were treated appropriately; those with no signs of specific infections were not treated. Health workers then took swabs of cells from the cervix and vagina, blood samples and urine samples, and used standard laboratory tests to diagnose infections in all participating women.

Among the 418 women for whom results were available, laboratory tests indicated that 32% had at least one endogenous infection (i.e., bacterial vaginosis or yeast infection). The proportions with specific infections ranged from 19% with bacterial vaginosis and 13% with candida infection to 1% or fewer with gonorrhea or chlamydia. These proportions were mostly unchanged when the sample was restricted to the 320 women for whom complete laboratory results on all infections were available.

A comparison of results from the two diagnostic approaches revealed that the WHO algorithm identified all women with bacterial vaginosis, yeast infection or trichomonas (i.e., its sensitivity was 100%). However, the algorithm also incorrectly identified all uninfected women as needing treatment (for a specificity of 0%). As a result, the positive predictive value of the WHO algorithm (i.e., the likelihood that it identified only those who actually had a disease) was low: 19% for bacterial vaginosis, 12% for yeast infection and 2% each for trichomonas and for the cervical infections gonorrhea and chlamydia.

The speculum-based algorithm was not as effective as the WHO algorithm at identifying women with an infection, pinpointing one-third of clients with bacterial vaginosis (32%) or trichomonas (33%) and nearly three-fifths of those with a yeast infection (59%). Visual inspection was much more specific than the WHO algorithm, however, correctly identifying anywhere from 80% (for trichomonas) to 97% (cervical infections) of those who were not infected. Still, because this method missed the majority of infected women, its positive predictive value was only somewhat better than that of the WHO algorithm—29% for bacterial vaginosis, 28% for yeast infection and 3% for trichomonas. Moreover, it was very unsuccessful with the most serious infections: Only one of the three women with gonorrhea or chlamydia was identified using this approach, but eight uninfected women were incorrectly assessed as having a cervical infection.

The WHO algorithm proved to be relatively expensive: Because it resulted in all women being treated, the total treatment cost per woman (US$1.22) and cost per true case (US$3.61) were somewhat greater for this approach than the respective costs of the speculum-based algorithm would have been (US$0.38 and US$2.75). The cost for every true cervical infection treated was $130 for the WHO algorithm; no cost could be calculated for the speculum-based algorithm, as no woman was correctly treated.

Moreover, with the WHO algorithm, 87% of the costs related to treatment and staff time went to unnecessary treatment, compared with just 36% of costs associated with visual inspection. On the other hand, while the latter approach wasted less money, it failed to identify infection in 78% of the women infected with trichomonas, all of the women with cervical infections and 58% of those with endogenous infections.

The researchers conclude that neither of the approaches they examined was adequate for detecting sexually transmitted infections in a low-prevalence situation. Both resulted in overdiagnosis of infection: This would represent a problem not only because of the unnecessary expense of treating uninfected women, but also because of the potential social consequences for women mistakenly told that they had a reproductive tract infection—particularly a sexually transmitted disease such as gonorrhea.

They recommend that in situations where the prevalence of sexually transmitted infections and endogenous vaginal infections is relatively low, efforts must be made to improve the accuracy of algorithms and diagnostic tests. In particular, alternative explanations for vaginal discharge need to be identified. Overtreatment will not be eliminated simply by improving existing algorithms, they add, if uninfected women continue to appear at health facilities with concerns about vaginal discharge.

The author of an accompanying commentary observes that undernourished and anemic women in south Asia often come to health facilities complaining of vaginal discharge (along with other symptoms, such as backache and dizziness).[2] Traditional understandings of physiology may lead women to interpret natural genital secretions as representing a loss of the body's vital essence. Such women may have "a culturally shaped illness," she argues, one that "is not necessarily associated with reproductive-tract disease. Rather, the illness reflects a general state of being unwell, linked to overwork, poor nutrition, and social stress."

The researchers conclude that in situations such as that in Matlab, where the overall prevalence of sexually transmitted diseases is low, it may not be efficient to locate infection control programs at providers such as family planning clinics, since few clients there will prove to be infected in the first place. What could prove more cost-effective, they suggest, is targeting populations that are at elevated risk of sexually transmitted infection, especially sex workers and their clients. Indeed, they add, algorithms for syndromic management may "work better in men with clinically observable discharge than in women," and situating efforts at sites providing family planning services effectively excludes men from being examined. *—M. Klitsch*

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STDs Decline Among South African Migrant Workers After High-Risk Local Women Receive Treatment

The prevalence of sexually transmitted diseases (STDs) declined sharply among migrant workers in a South African mining community as well as among high-risk women living near the mines after monthly curative and preventive services were provided to the women. Among women who made at least three visits to a free clinic set up in the community, rates of gonorrheal and chlamydial infection dropped from an initial 15% and 14%, respectively, to 8% and 3% by their third clinic visit.[1] Over the same period, the prevalence of one or both diseases among male migrant workers decreased from 11% to 6%, while the prevalence of genital ulcers dropped from 6% to 1%.

The clinic in a Free State mining town provided treatment and preventive services to female commercial sex workers and women with a high number of sexual partners from October 1996 through June 1997. The clinic was positioned near three single-sex mining hostels with a population of around 3,700 and within 2–4 kilometers of two more hostels. Two additional hostels were located more than five kilometers from the clinic.

Trained peer educators distributed clinic referral cards to women who frequented areas where miners were known to relax after work and encouraged them to attend the clinic on a monthly basis. At first visit, all referred women were assessed and treated for STDs. Those who reported being commercial sex workers or having at least three regular or intermittent sex partners were enrolled in the study.

Upon enrollment, each woman completed a questionnaire about her demographic and obstetric characteristics, sexual history and current STD symptoms. Participants received a genital examination and provided urine samples for chlamydia and gonorrhea testing. Syphilis tests were also administered. All women received prevention education and free condoms and were treated presumptively for chlamydia, gonorrhea and genital ulcers with a one-gram dose of an antibiotic. Women with STD symptoms received additional treatment. The protocol at monthly follow-up visits mirrored that at baseline.

At the study's inception, miners living in hostels near the mobile clinic were tested for STDs at the mine hospital, as part of their annual preleave physical examinations; they were tested again nine months later. Urine samples were tested for chlamydia and gonorrhea; men with positive results and those with genital ulcers were treated. The researchers had access to mine hospital records of outpatient visits for the period December 1995 to June 1997. The total number of these visits were compared with the average number of STD visits for each hostel for the periods December 1995 to June 1996 and December 1996 to June 1997.

A total of 407 women attended the mobile clinic at the start of the study, 235 of whom returned more than once and 172 of whom returned at least three times. Women who remained in the study for at least three clinic visits were, on average, 33.9 years old. Of those who had regular partners, the mean number was 1.9; 26% had ever used a condom with a regular partner. Some 65% had previously been infected with an STD; 43% had not sought treatment. Twenty-six percent of women who made at least three visits reported being commercial sex workers; these women averaged 2.3–2.4 clients per day. Although 32% of the sex workers who made three or more visits reported using condoms sometimes, only 7% had used one on their most recent day of work.

At the start of the study, 17% of women were diagnosed with gonorrhea and 14% had a chlamydial infection. Twenty-five percent of women had one or both of these infections and 6% had symptomatic genital ulcers caused by a bacterial infection. The prevalence of STDs dropped with each successive clinic visit. Rates of gonorrheal and chlamydial infection fell to 8% and 4%, respectively, among women making their second visit, and to 5% and 1% among those attending the clinic a fourth time. In addition, the prevalence of symptomatic ulcers dropped to 2% among women making a second visit and to fewer than 1% among women making a fourth visit.

In the subset of women who attended the clinic three or more times, initial rates of gonorrhea and chlamydia were 15% and 14%, respectively; 10% had genital ulcers. The prevalence of gonorrheal and chlamydial infections dropped to 10% and 5%, respectively, among women making their second visit and to 8% and 3% among women making a third visit. The prevalence of symptomatic ulcers fell to fewer than 1% among women making a second visit and then rose to 1% of women making a third visit.

According to self-reports, the proportion of sex workers who used condoms with all clients during the last working day before their clinic visit increased steadily from 2% among those making their first visit and 7% at the second visit to 28% at the third visit and 33% at the fourth visit. Condom use with regular partners did not change significantly.

Among miners, the prevalence of chlamydial infections decreased significantly, from 7% at the initial visit to 4% nine months later. A small decrease in the rate of gonorrheal infection (from 5% to 3%) was not statistically significant. The proportion of men with one or both of these infections declined significantly, from 11% to 6%. The prevalence of genital ulcers also dropped, from 6% to 1%.

Data from the mine hospital suggested that the decrease in STD rates was particularly strong among men living in the hostels nearest to the mobile clinic. Among men living in the immediate vicinity of the clinic, the proportion seeking care for STDs at the hospital fell by 22% from the period between December 1995 through June 1996 to the comparable period a year later. Visits for STD care among men living 2–4 kilometers away from the mobile clinic declined less sharply (9%) over the same period. In contrast, the proportion of men living five or more kilometers from the intervention site who sought STD care increased by 34%.

The authors of an accompanying editorial point out that this program was carried out in a population that remained in one site for months at a time, and that it might not produce similar declines if transferred to a less stable environment, such as a port city or an urban transport route.[2] They also note that mobile clinics and monthly mass treatment may not be feasible or affordable in all settings. They conclude, however, that the study results "illustrate the importance of bringing services to those who need them, especially in areas with marginalized and disempowered residents."—*I. Olenick*

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Once-a-Month Injectable Is Acceptable, Offers Effective Protection from Pregnancy

A new monthly injectable contraceptive is highly effective, safe and well accepted among women, according to two studies based on a U.S. clinical trial comparing the injectable with an oral contraceptive. A study of the efficacy and safety of the Lunelle Monthly Contraceptive Injection reports that during the first year after participants chose their method, no pregnancies occurred among women using the injectable, while oral contraceptive users had two pregnancies.[1] Side effects among women in the injectable group were generally minor and were similar to those documented in other studies of women taking combined hormonal contraceptives, including weight gain, irregular or prolonged bleeding, emotional instability and acne. An assessment of women's satisfaction with their method reveals that more than 80% of those using the injectable considered their experience with it somewhat or very favorable, and more than 90% said that they were likely to recommend the injectable to a friend.[2]

Both studies are based on data collected from 1,103 women who sought contraceptives at 42 clinical sites in the United States between April and August 1998. Women were eligible to participate in the trial if they were aged 18–49, were not pregnant, had not had an abortion within the past five days and had not given birth within the past four weeks. All of the women had used contraceptives (hormonal or nonhormonal) prior to enrollment. Women were excluded if they had contraindications to hormonal contraceptive use; were older than 35 and smoked or had chronic hypertension or diabetes; had a history of alcoholism or drug abuse; or had received another injectable contraceptive within the past six months.

The investigators offered each participant the choice of receiving either the monthly injectable (which contains 25 mg of medroxyprogesterone acetate and 5 mg of estradiol cypionate) or a commonly prescribed triphasic oral contraceptive. Participants (of whom 782 chose the injectable and 321 the pill) agreed to use their method for at least 60 weeks and to return monthly to receive their next injection or packet of pills.

Efficacy and Safety

In both the injectable and the oral contraceptive groups, the women's average age was 27–28 years; the groups also were similar with respect to weight, body mass index and previous menstrual patterns. Injectable users were less likely than women who chose the pill to be white (68% vs. 74%) and to have used a hormonal contraceptive in the past (44% vs. 65%); they were more likely ever to have been pregnant (64% vs. 45%). Fifty-five percent of women in the injectable group completed the trial, as did 68% of those in the oral contraceptive group.

One-year contraceptive efficacy was assessed on the basis of 8,008 woman-cycles of use for the injectable and 3,434 woman-cycles for the triphasic oral contraceptive. During that year, no pregnancies occurred in the injectable group, and one occurred in the oral contraceptive group. (Another pregnancy occurred during the 15th cycle in the oral contraceptive group.)

The women used monthly diary cards to report the number of days on which they experienced bleeding or spotting. Users of both methods experienced regular menstrual cycles after the first month, and reported fewer days of bleeding or spotting as the duration of use increased. For the first six months, pill users reported more frequent bleeding than women in the injectable group; throughout the year, however, injectable users had more irregular bleeding than women taking the pill.

Over the course of the study, 89% of women in the injectable group experienced some adverse effect of method use, including infection, headache, breast tenderness, weight gain, irregular or prolonged bleeding, and acne. Eighty-four percent of pill users experienced similar effects. Only 20% of injectable users and 8% of pill users dropped out of the study because of these side effects. The only serious medical problems that investigators linked to the contraceptive method being used were two instances of gallbladder disease, which required laparoscopic surgery. Both were in the injectable group, and these women continued to participate in the study after surgery.

Acceptability

The acceptability study was based on the women's responses to three questionnaires: one assessing their contraceptive history and attitudes toward the method they chose for the study, one addressing specific aspects of using the method they selected and one exploring their feelings about their psychological well-being. The questionnaires were administered at the beginning of the trial and 20, 40 and 60 weeks later. Approximately 85% of the women completed the initial and final questionnaires. To assess the influence of recent pill use, the investigators divided the oral contraceptive group into those who were using the pill before they entered the study (209 women) and new users (112).

Women in the injectable group were less likely than those in the oral contraceptive group (prior and new users combined) to report that use of the method was not at all bothersome (80% vs. 92%). They also were less likely to find it very comfortable to take their method (55% vs. 75–79%); the investigators state that this discrepancy is to be expected when comparing use of an oral with an injectable method.

Of women using the injectable, 86% said that the method did not interfere with social activities (interactions with friends and family that were not work- or school-related); similar proportions of pill users (90–94%) gave this response. Somewhat greater differences emerged with respect to daily activities (such as attending work or school, or doing housework): Eighty percent of injectable users reported interference, compared with 92–95% of pill users.

About half of injectable users (47%) reported that their sexual relationship was always satisfactory; the proportion was similar among new pill users (44%), but was higher among prior users of oral contraceptives (62%). Fewer than one-fifth (17%) of the injectable group reported a dampening or loss of libido, as opposed to nearly one-fourth (23%) of new users and one in 10 (11%) prior users of oral contraceptives.

When asked whether it was difficult to return for the monthly office visits, the women in all three groups gave similar responses: Eighty-seven percent of the injectable group said it was not difficult to return monthly; 80% of new and 86% of prior users of oral contraceptives agreed that it was not.

Roughly equal proportions in all three groups (83–86%) rated their overall experience with the method as somewhat to very favorable. Likewise, more than 90% in each group said they probably or definitely would recommend the method to a friend.

In all three groups, the women's assessment of their psychological well-being decreased over time. However, the changes did not differ substantially for injectable users and new pill users; furthermore, results of regression analyses indicated that the changes were similar for the injectable group and the pill group overall.

The investigators note that the results may be limited by selection bias: First, participants chose their contraceptive method and were not randomly assigned. Second, two-thirds of women in the oral contraceptive group had been using the method for some time and therefore are not strictly comparable to women using a new method. Nevertheless, the researchers conclude that the monthly injectable "may be well accepted by those women who desire the convenience of an effective but noncoital, nondaily-use method that maintains regular cycles and has minimal lifestyle alterations."—*M. Reiss*

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Home-Based Neonatal Care by Village Health Workers In Rural India Reduces Deaths from Bacterial Infection

The provision of home-based neonatal care by village health workers reduced the infant mortality rate in a rural population in India by almost 50%. Data collected during a three-year field trial indicate that the intervention reduced deaths of newborns from bacterial infections by 76%.[1] One year of neonatal care cost US$5.30 per newborn and averted one death per 18 newborns who received the care.

The study was conducted in the Gadchiroli district of India, an extremely underdeveloped region with high rates of malnutrition and female illiteracy. From April 1993 to March 1995, male health workers collected baseline data from the villages, including the number of live births, neonatal deaths and infant deaths and information about traditional neonatal care in the villages.

The intervention area comprised 39 villages in which a local woman with 5–10 years of education was willing to act as a health worker. An additional 47 villages made up the control area. The two groups of villages were similar in their demographic and characteristics and in their access to government health services.

The female health workers in the 39 intervention villages received six months of training in taking histories of pregnant women, observing the process of labor, examining newborns, recording data and managing cases of pneumonia in children, including newborns.

The researchers introduced the intervention in the 39 villages in steps over a three-year period. During the first year, the female health workers identified pregnant women in the village, collected data during home visits in the women's third trimester, observed labor and examined babies at birth. The health workers also visited the home to gather information and examine the mother and child on days one, two, three, five, seven, 14, 21 and 28 after the birth, as well as on any other day when the family called. They weighed the child each week and managed minor illnesses and pneumonia in the children. The health workers followed up with the children for 28 days after birth, until the mother left the village or until the baby died, whichever happened first.

The researchers used the health workers' data to estimate the natural incidence of death among newborns and assess health care needs in the villages. Because these data indicated that septicemia, meningitis and severe pneumonia—collectively called sepsis—were the most common cause of neonatal death in the area, the intervention was adapted to emphasize early detection and treatment of those infections.

In the second year, the village health workers began providing home-based management of neonatal illnesses to newborns whose parents sought their care. Five months later, the health workers added management of neonatal sepsis to their duties.

In the third year, the village health workers began offering mothers and grandmothers health education about providing appropriate care and nutrition during pregnancy, preventing infection, recognizing symptoms in newborns and seeking immediate help from a health worker. The health workers stressed the importance of early initiation of breastfeeding and exclusive breastfeeding, temperature maintenance and infant weight gain.

Data collection independent of that conducted by the female health workers continued throughout the study. Health workers recorded data on births and child deaths from both the intervention and control villages and conducted a door-to-door survey once every six months in both areas to detect any missed events. In addition, a physician visited each village in the intervention area once every two weeks to verify the village health workers' data, provide feedback and continuing education to the workers, and independently record observations of a sample of 119 newborns. The physician did not provide treatment but advised hospital admission to parents whose newborn was seriously ill.

In the 39 intervention villages, the infant mortality rate decreased from its 1993–1995 baseline rate of 75.5 per 1,000 live births to a rate of 38.8 per 1,000 in 1998—a 49% reduction. Over the same period, the infant mortality rate for the 47 control villages decreased by only 3%, from 77.1 to 74.9 per 1,000 live births.

The neonatal mortality rate in the intervention area decreased by 59%, from 62.0 per 1,000 live births to 25.5 per 1,000 in 1998. In contrast, the neonatal mortality rate in the control area increased by 3%, from 57.7 per 1,000 live births to 59.6 per 1,000.

In 1995–1996, before village health workers received training in management of sepsis, village health workers visited 763 newborns. Among these, 40 died, 21 because of sepsis. The rate of neonatal death from sepsis was 27.5 per 1,000 live births. In 1997–1998, after village health workers began managing cases of sepsis, there were 22 deaths among the 913 newborns they attended. Six of these deaths were caused by sepsis, for a mortality rate of 6.6 per 1,000 live births. This decrease of 76% in the neonatal mortality from sepsis accounted for 74% of the total reduction in neonatal mortality.

To determine the number of deaths averted by the intervention in the third year of the field trial, the researchers used the number of neonatal deaths in the control villages as the approximate number of neonatal deaths that would have been expected in the intervention villages and subtracted from that number the actual number of neonatal deaths in the intervention villages. They estimated that 51 deaths were averted among the 913 newborns who received care from the health workers. Thus, the intervention averted one death among every 18 newborns receiving care from the village health workers in the third year of the field trial.

The study data indicate that expenditures for home-based neonatal care per newborn in 1997–1998 included $1.50 in nonrecurring costs and $3.80 in recurring costs, for a total of $5.30 per newborn. The researchers point out that this outlay is much lower than the cost of hospital-based neonatal care reported in earlier studies in urban India, which ranged from $17.30–44.20 per neonate per day in Chennai (with a mean hospital stay of 8.8 days) to $17.00 per newborn in Vellore in 1992 for newborns similar to those in this field trial. They conclude that "even in populations with poor economic and nutritional status and low female literacy, the infant mortality rate can be reduced by nearly half through health education and home-based neonatal care."—*B. Brown*

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Filipino Women Who Use a Modern Method Prefer the Pill or Tubal Sterilization

Women in the Philippines can expect to have 3.7 children over the course of their reproductive years, if current fertility rates remain constant. According to the 1998 Philippines National Demographic and Health Survey (PNDHS), 47% of married women currently practice contraception.[1] The pill and female sterilization are the most widely used methods (each used by 10% of married women who practice contraception), followed by withdrawal and natural family planning (9% each).

The sample for the 1998 PNDHS included 13,983 women aged 15–49. The majority of respondents were married at the time of the survey (53%), had attended at least elementary school (98%) and were Catholic (82%).

Marriage

The median age at first marriage among Filipino women aged 25–49 was 22.1 in 1998. Age at first marriage rose from 18.7 among women with no schooling to 21.5 among women who had attended high school. Fewer than 50% of women with at least some college education had married by age 25. Women in urban areas married, on average, two years later than those in rural areas (23.0 vs. 21.0).

At the time of the survey, 53% of women aged 15–49 were married and 36% had never been married. The remainder were either cohabiting, widowed or separated.

Women aged 25–49 had first had intercourse at a median age of 22.1 years, the same as that at which women first married. Age at first intercourse appears to be rising: Women aged 25–29 had started having sex at a median age of 22.8, compared with 21.7 among women aged 45–49. Like age at first marriage, the median age at first intercourse rose with level of education: Women with no education had started having sex at age 19.3, while women who had attended high school had first had intercourse at age 21.5.

Fertility and Fertility Preferences

The total fertility rate (TFR) for Filipino women aged 15–49, based on the three years preceding the survey, was 3.7 lifetime births per woman. Women who lived in rural areas could expect to have almost two more lifetime births than women in urban areas (4.7 vs. 3.0). Women with no education or with an elementary school education had a much higher TFR than women with at least some college education (5.0 vs. 2.9 births).

Women aged 25–49 had had their first birth at a median age of 23.3. Women in urban areas had begun childbearing two years later than women in rural areas (24.3 vs. 22.2), and women's age at first birth rose from 20.5 among women with no education to 22.7 among women with a high school education.

Overall, 7% of women aged 15–19 had had a birth or were pregnant with their first child at the time of the survey. Adolescents living in rural areas were more than twice as likely as those in urban areas to have begun childbearing (11% vs. 5%). Further, the likelihood that a young woman had begun childbearing declined as her level of education rose, from 17% of 15–19-year-olds with no education to 5% of women with at least some college education.

Women in the Philippines, on average, considered 3.2 children ideal. Younger women wanted smaller families than older women. For example, women aged 15–19 wanted 2.8 children, while women aged 45–49 considered 3.8 children ideal. Further, women with no education want-

ed larger families than women who had had at least some education (5.1 vs. 3.0–3.5 children). Desired family size varied little by area of residence.

The majority of women (62%) reported wanting no more children. Women with an elementary school education were more likely than those with more education or with none at all to want no more children (72% vs. 43–60%). Further, the desire to end childbearing rose sharply with the number of living children, from 17% of women with one child to 53% of those with two children and 75% of those with three; 89% of women with six or more children wanted no more.

The wanted fertility rate—a composite index calculated in the same way as the TFR, but omitting births exceeding the number women considered ideal—was one birth lower than the TFR (2.7 vs. 3.7). Women in urban areas had a wanted fertility rate that was considerably lower than that of rural women (2.3 vs. 3.3). Women with no schooling had a fertility rate substantially greater than that of women with at least some college education (3.9 vs. 2.5).

Overall, 20% of Filipino women were considered to have an unmet need for family planning services—9% for means of spacing births and 11% for means of ending childbearing. An unmet need for family planning was more common among rural than among urban residents (23% vs. 16%). Teenagers and women aged 20–24 were the age-groups most likely to have an unmet need for means of spacing births (27% and 21%, respectively). In terms of schooling, a need for means of spacing births was greatest among women with no education (14% vs. 8–9% among other women), and women with no education or elementary schooling were more likely than women with higher levels of education to have an unmet need for means of ending childbearing (15–16% vs. 8–10%).

Contraceptive Knowledge and Use

Knowledge of family planning is almost universal in the Philippines: At the time of the survey, 98% of currently married women knew of at least one modern method and 94% knew of at least one traditional method. The most widely known methods were the pill (mentioned by 97% of currently married women), followed by the condom (95%), the IUD and female sterilization (92% each), and the injectable (89%).

A total of 69% of married women had ever practiced contraception; the pill and the condom were the methods reported by the largest proportions of women (36% and 14%, respectively). At the time of the survey, 28% of women were using a modern method and 18% were using a traditional one. The most widely used methods were female sterilization and the pill (each mentioned by 10% of women), followed by withdrawal and natural family planning (9% each). No other method was relied on by more than 4% of women.

Use of modern methods was higher among women in urban areas than among rural inhabitants (31% vs. 25%). Further, women with at least some education were much more likely than women with no formal schooling to rely on such methods (25–31% vs. 9%). When family size was considered, contraceptive prevalence was highest among women with three children (40%) and lowest among women with none (1%).

Most women who used a modern contraceptive method obtained their contraceptive from a public source (72%), such as a barangay or community health station (24%), a government hospital or a local health station (23% each). However, the majority of women who used condoms obtained them from a private medical source (54%), such as a pharmacy (47%). Overall, 41% of women practicing contraception discontinued use of their method within the first 12 months. Users of condoms, the injectable, withdrawal and the pill were the most likely to discontinue use (60%, 52%, 46% and 44%, respectively). Of those who discontinued, 31% cited method failure, 16% side effects and 15% a desire to become pregnant. Users of the injectable were most likely to report side effects (32%); users of withdrawal were most likely to cite method failure (22%).

Among women not currently practicing contraception, 33% intended to use a method in the next 12 months and 8% planned to use a method later. The pill was the preferred method of 40% of women intending to practice contraception at some time in the future.

Fifty-four percent of nonusers did not intend to practice contraception in the future. The reasons most often cited for nonuse among women younger than 30 were a desire for more children (27%), side effects (25%) and health concerns (15%). Among women aged 30 or older, the most common reasons given for nonuse were a desire for more children (19%), menopause or hysterectomy (18%), side effects (16%) and health concerns (13%).

The majority of women in the Philippines had heard family planning messages on the radio or on television (67% and 71%, respectively). In addition, 44% each had seen such messages in a newspaper or on a poster, and 34% had acquired a family planning brochure. Women's exposure to family planning messages through the media increased with level of education: Exposure to family planning messages on television rose from 16% of women with no education to 84% of women with at least some college education. Most women (87–88%) said it was acceptable to use the media to disseminate family planning information.

Maternal and Child Health

The mothers of 86% of infants born in the five years preceding the survey had obtained prenatal care from a medical professional, usually a nurse-midwife (47%). Of births to women who received prenatal care, 48% were to women who made their initial visit within the first three months of pregnancy, and most (77%) were to women who had had three or more prenatal visits. The majority of births took place in the woman's home (66%); the remainder occurred at a health facility.

The majority of children born in the five years preceding the survey were breastfed (88%); the median duration of breastfeeding was 12.8 months. Female infants were breastfed for longer than male infants (13.5 vs. 11.6 months). The duration of breastfeeding declined as level of education rose, from 15.4 months among women with no schooling to 4.6 months among women with at least some college education. Further, women in rural areas breastfed their children for more than twice as long as women in urban areas did(15.5 vs. 5.6 months).

Infant and child mortality rates have declined in the Philippines over the past 15 years. In the period 10–14 years before the survey, 46 of every 1,000 infants died before their first birthday, compared with 35 deaths per 1,000 in the five years preceding the PNDHS. Over the same period, mortality before age five dropped from 72 deaths per 1,000 births to 48 deaths per 1,000.

Overall, mortality rates for the 10 years preceding the survey were higher in rural than in urban areas. For instance, 40 of every 1,000 infants living in rural areas died before their first birthday, compared with 31 of every 1,000 infants in urban areas. Further, 63 of every 1,000 rural children died before their fifth birthday, compared with 46 of every 1,000 urban children. Mortality levels also varied with the mother's level of education, dropping from 136 deaths per 1,000 children younger than five whose mothers had no education to 28 deaths per 1,000 children born to mothers with at least some college education. In addition, infants and children born to women who received no prenatal care were more likely to die than

were those born to mothers who had received prenatal and delivery care. For instance, 111 of every 1,000 children born to mothers who had no prenatal or medically trained delivery assistance care died before age five, compared with 30 of every 1,000 whose mothers received care both prenatally and at delivery.

According to direct estimates of mortality based on the surviving sister method, in which respondents are asked about the survival of all of their siblings, 172 Filipino women died of maternal causes for every 100,000 live births between 1991 and 1997. Maternal deaths accounted for approximately 14% of all deaths to women aged 15–49.—*I. Olenick*

Reference

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Providers, Clients Okay Emergency Contraception In Nairobi and Mexico City

More than half of family planning providers and clients in Mexico City,[1] and the great majority of providers and clients in Nairobi, Kenya[2] support the introduction of emergency contraception in their countries. Two studies of knowledge, attitudes and practices concerning emergency contraception in these cities found that although clients in both cities lacked accurate information about the Yuzpe method, the overwhelming majority (84% in each) said they would use the method or recommend it to friends. However, a large proportion of providers and clients in both cities cited concerns about emergency contraception's side effects.

The Mexico City Study

Interviews were conducted with 40 health care providers and 1,127 clients at three family planning clinics and a university health clinic between January and June 1997. The providers included physicians, nurses, psychologists, social workers and one administrator.

The providers were first asked if they had heard of emergency contraception and whether they knew what it is. Of all of the providers, 68% claimed to have heard of emergency contraception; family planning providers were more likely than university clinicians to have heard of the method (88% vs. 54%).

Only 30% of providers knew that emergency contraception is a postcoital method, and the respondents who reported having heard of it were no more likely than the others to know what it is. In fact, providers at family planning clinics that offered emergency contraception were no more likely than others to identify it correctly. Most providers thought that emergency contraception is a contraceptive used during intercourse or an abortifacient.

The interviewers then briefly explained the method's timing, effectiveness, side effects and composition. Once providers were informed about emergency contraceptive pills, 55% reported that they would support a dedicated product's introduction in Mexico, 10% said that they would oppose its introduction and 35% were unsure. Providers who were older and those with more years of clinical experience were significantly more likely than others to support the introduction of the method. Among the concerns cited were side effects (53%), misuse or too frequent use (40%) and self-administration (30%). Many providers also mentioned legal and social obstacles (58%), including civil and religious resistance (28% and 18%, respectively).

The great majority of providers said that emergency contraception should be offered in hospitals and clinics (88%), while much smaller proportions said that it should be available from midwives (33%) or at schools (28%), at pharmacies (18%) or from vending machines (10%). More than nine out of 10 providers believed that emergency contraception should be dispensed by doctors, while more than half thought that it could be dispensed by nurses. Fewer providers said that other professionals, such as pharmacists, sex education teachers or community health workers, should provide the method.

Among the clients surveyed, 83% were female and 73% were aged 20–34. More than half (51%) had had more than a high school education, and 39% had completed high school. Most of the clients (83%) had had sexual intercourse, and 59% of those who were sexually active were practicing contraception; 48% had previously been pregnant. Only 18% of the clients had ever heard of emergency contraception. Logistic regression analysis showed that those who had had more than a high school education or who had ever been sexually active were significantly more likely than others to have heard of the method (odds ratios of 8.3 and 2.4, respectively).

Of the 200 clients who claimed to have heard of emergency contraception, just 10% gave accurate answers to four questions about its composition, effectiveness and use; 32% answered three out of four of these correctly. Only 1% of the sample reported having used the method. The clients were then given the same information on emergency contraception as the providers.

Nearly two-thirds (63%) of the clients agreed or agreed strongly with the statement that emergency contraception should be offered in Mexico; 78% said it should be available to all women. Eighty-four percent said that they would use emergency contraception or recommend it to a friend. Nevertheless, 73% reported that they had concerns about the method. Health problems and side effects were the most commonly cited issues (52%); concerns about frequent use or substitution for a regular method (20%), effectiveness (10%), and the possibility of congenital defects (8%) or future infertility (8%) were also reported.

Multivariate regression analysis revealed that clients who had had sex were more likely than those who had not to support the introduction of emergency contraception in Mexico. University students, clients who were currently practicing contraception and those who had previously been pregnant were significantly less likely to support the method's introduction; however, these groups were at least as likely as others to report that they would use the method or recommend it to friends.

The more education clients had, the more likely they were to express concerns about emergency contraception (odds ratios of 2.6 for those with a high school education and 4.5 for those with higher education). Clients who were currently practicing contraception were more likely than those who were not to cite concerns (1.4).

Having heard of emergency contraception was positively associated with willingness to use and recommend the method, but not with support for its introduction in Mexico. Among clients who had heard of emergency contraception, those with more knowledge about the method were significantly less likely to support its introduction in Mexico.

Most clients believed that if emergency contraception is introduced in Mexico, it should be available at hospitals (93%), clinics (90%) and pharmacies (62%). Exactly half said that it should be dispensed in schools and through midwives. A smaller proportion (30%) thought the method should be offered in vending machines. Some 97% of clients believed that physicians should dispense emergency contraception, and more than half thought that other health care professionals such as nurses (60%), psychologists (51%) and

community health care workers (51%) should do so; 74% believed that sex education teachers and counselors should also be able to dispense the method.

The Nairobi Study

A study of attitudes toward and knowledge and practice of emergency contraception in Nairobi addressed the same questions more broadly. In addition to surveying public and private health care providers and family planning clients, the researchers looked at policy documents and service guidelines and interviewed five national family planning policymakers. All data were collected in August and September 1996.

The researchers did not find any policy documents, client materials or service guidelines dealing with or mentioning emergency contraception.

Four out of five policymakers were fairly knowledgeable about the method. All wished to widen access to emergency contraception in Kenya. However, they were split about teenagers' access to the method. None of those interviewed believed emergency contraception to be an abortifacient. The policymakers agreed that emergency contraception should be distributed by doctors, nurses and clinical officers, and some believed that community-based distributors should be able to dispense it as well. All felt that emergency contraception should be sold over the counter, but some thought that the introduction process should be gradual.

The investigators interviewed 93 randomly selected physicians, nurses, clinical officers, pharmacists and community-based distributors. There were 68 public-sector providers and 25 private-sector providers in the sample.

Of the public-sector providers, 34% had heard of emergency contraception, compared with 80% of private providers. Only 4% of public-sector providers were offering emergency contraception at the time of the interview; 46% of private-sector providers were doing so. There was very little demand for the method, which was given to any woman who asked for it, with the exception of one provider who did not dispense it to adolescents.

More than 90% of public and private providers reported that they would support the use of emergency contraception in their own clinics and in Kenya in general. Those who favored providing the method cited reasons such as its ability to prevent unwanted pregnancies for women whose husbands refused to practice contraception or for women who had been raped, and its possible contribution to reducing the abortion rate.

The small proportion of providers who were opposed to the method (10%) voiced concerns about efficacy and potential misuse. They feared that its introduction might cause a decline in condom use and thus help spread HIV and other sexually transmitted diseases.

The providers disagreed about who should distribute emergency contraception in Kenya. All felt that physicians and nurses should be responsible for supplying the method, but some questioned the ability of community-based distribution workers and pharmacists to oversee distribution. There was also disagreement within the sample concerning who should have access to emergency contraception. Most providers believed that access should be unrestricted, but many also felt that examining women and educating them about the method was especially important in Kenya, where a large proportion of women are illiterate. The question of distribution to teenage girls was the most divisive issue.

The providers had mixed feelings about supplying women with packets of emergency contraception in advance. Those who were against the idea mostly cited the lack of monitoring by a health care professional. Providers who felt that distributing advance supplies was a good idea simply stated that this would facilitate use and help women in remote areas. The providers were split again between those who felt this option should be offered only to married women and those who believed that groups with a high rate of sexual activity—such as teenagers and sex workers—would benefit from advance distribution. All of the providers surveyed supported the idea of offering a dedicated product for emergency contraception, rather than breaking up existing packets of oral contraceptives.

Clients were recruited from 10 public and private clinics in Nairobi, which were chosen to ensure the respondents were of varying socioeconomic status. Interviewers approached every other client at the sites until they had a sample of 282 women. The mean age of the women was 26 years, and more than half had completed more than eight years of schooling. The great majority (92%) had given birth and 80% were currently using a contraceptive method.

Most of the clients did not know about emergency contraception; only 11% knew the method by name. The majority (61%) believed that there was nothing they could do to prevent pregnancy after unprotected intercourse.

Of the clients who were familiar with emergency contraception, 80% had heard of it very recently. Most knew about the method through friends or family (47%) or through the media (23%). A very small proportion (3%) had heard about emergency contraception from a clinic or pharmacist.

Even the clients who had heard of the method were not well informed. More than half (60%) of those who reported familiarity with emergency contraception were not sure if the method was appropriate for use when a menstrual period was late. Only two women knew that emergency contraception is effective up to 72 hours after unprotected intercourse; most thought that it had to be used immediately or within 24 hours. Almost two-thirds of the clients were not sure about emergency contraception's effectiveness, and just one respondent knew that the method is 75% effective. Only 17% of women who knew about the method understood that its ingredients are the same as those in oral contraceptives. However, more than two-thirds of the respondents who were familiar with emergency contraception knew of at least one place where it was distributed.

Four out of five family planning clients said that emergency contraception is a suitable method for women in Kenya. A slightly larger proportion (84%) reported that they would use or recommend emergency contraception if it were needed.

More than half (56%) of the clients thought that emergency contraception should be available to all women without restriction, but 18% believed that young adolescents should be denied access. The vast majority of respondents (98%) felt that doctors should distribute emergency contraception, while two-thirds thought that any health center staff member could do it and 50% said that pharmacists could do it; only 12% thought that it should be available over the counter. Some 64% of those who thought women would pay believed that the method should be priced at 50 shillings ($6.00) or less. However, almost 40% of the clients did not think women would pay or were not sure.—*L. Gerstein*

References

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