



Assessing the acceptability, service delivery requirements, and use-effectiveness of the diaphragm in Colombia, Philippines, and Turkey¹

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Abstract

The diaphragm is not available in many countries, despite the recommendations of numerous authors that it has important advantages as a woman-controlled method that offers some protection against sexually transmitted diseases, and one that is safe and free of side effects. An interagency team collaborated to introduce the diaphragm in Colombia, the Philippines, and Turkey, using the same protocol to assess the acceptability, service delivery requirements and use-effectiveness of the method. Eighteen public and private sector service delivery sites were involved and a total of 550 women were enrolled in the study. Provider training aimed to improve the quality of care with which all methods were delivered and included counseling about sexuality and reproductive health risks. The cumulative 12-month pregnancy rate of 10.1 (SE 1.7) per 100 woman-years is on the low end of previous studies of the diaphragm, and the 12-month continuation rate (57.2 [SE 2.4] per 100) compares favorably with that for oral contraceptives and the intrauterine device. Focus group discussions conducted with clients and providers indicated that the method was an important alternative for some women, particularly those who had experienced health problems with other methods or were unable to negotiate condom use with their partners. Provider biases diminished as they observed the strategic niche that the diaphragm filled for their clients. While providing the diaphragm requires training and good client-provider interaction, the requirements are consistent with those called for in the Programme of Action of the International Conference on Population and Development (ICPD, 1994). With proper attention to quality of care, the diaphragm can be successfully offered in resource-poor settings. © 2001 Elsevier Science Inc. All rights reserved.

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1. Introduction

The unique advantages of the diaphragm have been overlooked as newer contraceptive methods dominate the market. The diaphragm is a woman-controlled method useful for women who want a barrier method but may be depen-

dent on their partner's willingness to use a condom, may lack access to or prefer not to use the female condom, or who have adverse reactions to hormonal methods or the intrauterine device (IUD). While the cervical cap has similar qualities, there is little information about its protective effects. The diaphragm has been shown to confer protection (relative risk of 0.5 or less compared to not using a method of contraception) against pelvic inflammatory disease, and tubal infertility resulting from sexually transmitted disease (STD) [1-4]. Cervical neoplasia is also lower among diaphragm users than among women who use either oral contraceptives or IUDs [5]. In a retrospective study of clients of

¹ The views expressed in this paper are those of the authors and do not necessarily reflect those of their organizations.

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an STD clinic, a 65% reduction in rates of gonorrhea and trichomoniasis was found among diaphragm users as compared to women who were not using a method or had been sterilized [6].

The diaphragm has not been tested for its ability to protect against HIV, but because the cervix may be the portal of entry for HIV in women, the diaphragm may offer some protection [7]. Although under controlled conditions, the diaphragm would not be comparable to the male condom in protecting against STDs or HIV, in actual use, women relying on woman-controlled barrier methods consistently experience greater protection from STDs than those relying on condoms [6]. The combined effect of a barrier against infected sperm and a vehicle for holding spermicide in place so that its antiviral and antibacterial properties can better protect the cervix are thought to be factors that contribute to the diaphragm reducing the transmission of STDs [8]. Use of spermicide is recommended in conjunction with the diaphragm though there is no firm evidence that this increases the contraceptive effectiveness or protection against STDs in practice. Preliminary results showing an increased risk of HIV infection in women using vaginal gel containing nonoxynol-9 (N-9) compared to women using a vaginal gel without N-9 [9] has raised questions about the advisability of using N-9 spermicide with a diaphragm under conditions of high HIV risk.

The diaphragm also meets the needs of women who have intermittent sexual relations. For these reasons, numerous authors have suggested that providers should conscientiously include the diaphragm in the contraceptive information provided to clients [1–3,6,10–13]. The diaphragm has not been a part of the method mix in many developing countries. In those countries where it had been available in the 1970s, supplies and trained providers dwindled, and by the mid-1990s the United Nations Population Fund (UNFPA), a major global supplier of contraceptives, was shipping a mere 5,000 diaphragms per year world-wide (Christian Saunders, UNFPA, personal communication).

In 1992, delegates to a World Health Organization (WHO) sponsored meeting in Manila on Women's Perspectives on the Selection and Introduction of Fertility Regulation Technologies expressed strong support for giving more attention to woman-controlled methods that may provide protection against STDs and HIV, foster a woman's knowledge about her body, and have minimal side effects [14]. At that time it was noted that the diaphragm was the currently available method that most closely met these 3 criteria. In response to the needs expressed by women, an interagency diaphragm study was developed to focus on the service delivery requirements of providing the diaphragm in developing-country settings where the method is virtually unknown and where both providers and clients are unaware of its potential benefits [12]. The present study, conducted between 1995 and 1997, was a collaborative effort between the UN Development Programme/UNFPA/WHO/World Bank Special Programme of Research, Development and

Research Training in Human Reproduction (WHO/HRP), Family Health International (FHI), and the Population Council, the latter 2 with funding provided by the United States Agency for International Development. Using a common protocol, each of the organizations took responsibility for conducting the research in one country. WHO/HRP collaborated with the Institute of Child Health at Istanbul University in Turkey, FHI's counterpart in the Philippines was Reproductive Health Philippines, and the Population Council worked with Si Mujer and Profamilia in Colombia. The study was conducted in a total of 18 sites, 4 each in Turkey and Colombia, and 10 in the Philippines. This paper examines the acceptability of the method to users and providers, its use-effectiveness, and the service delivery issues that successfully providing the diaphragm entail.

2. Materials and methods

2.1. Selection of sites

In each country, sites were selected to reflect a broad range of contraceptive services outlets, including government and non-government clinics in urban and rural settings, serving women of differing socio-economic status. Selection criteria included: an adequate client caseload (more than 50 new clients seeking contraception per month), a range of contraceptive methods, good counseling and client-provider interaction, and a staff motivated to provide diaphragms, and to collect and manage the data.

2.2. Training of providers

A standard training package developed by FHI and Cemicamp (São Paulo, Brazil) addressed all aspects of providing the diaphragm, including attention to gender issues in contraceptive counseling, notably sexuality and contraceptive decision-making. Providers practiced interpersonal communication skills, and were trained to fit the diaphragm through use of an anatomic model and by practicing on volunteer patients. In each country, 18–20 providers received 4–6 days of training, including theory, practice and contraceptive updates on all methods available at their site.

2.3. Criteria for joining the study

All women who sought family planning and met the inclusion criteria were eligible to participate in the study. In most settings, the diaphragm was mentioned in a group counseling session together with all other methods available. Women interested in the diaphragm were screened via questionnaire and pelvic examination. They were excluded from using the diaphragm if they had a known allergy to spermicides or latex, a history of 2 or more urinary tract infections per year, or a history of toxic shock syndrome. In addition, a pelvic examination was done to exclude women with abnormalities in

vaginal anatomy that might interfere with the placement of the diaphragm, or signs of a current vaginal, cervical or urinary tract infection. The process of measuring the vagina, and teaching insertion and removal of the diaphragm was most often done by a female physician or nurse/midwife. Qualifying women were fitted for a standard coil or arcing spring diaphragm and were given 20–40 min to practice insertion and removal, and have the insertion checked by the provider. Women were instructed to use the diaphragm only in conjunction with a gel containing nonoxynol-9 and to reinsert spermicide before each act of intercourse.

Women interested in participating in the study signed written informed consent forms that included information on the risk of pregnancy. They were interviewed using a socio-demographic questionnaire and were asked to return at 2 weeks, 3 months, 6 months, and 12 months. At follow-up visits, women were questioned about their satisfaction with the method, patterns of use, partner attitudes, reasons for continuation or discontinuation and whether they had become pregnant between follow-up visits. For comparison, a convenience sample of concurrently identified women who chose methods other than the diaphragm also completed the baseline socio-demographic questionnaire at each site.

At the end of the first year of the study, focus group discussions (FGDs) were held separately with women who had chosen the diaphragm or other methods, and with health care providers. In Turkey, in-depth interviews also were conducted with partners of both users and discontinuers, and with providers who were not participating in the study and had not offered the diaphragm.

2.4. Data management and analysis

The results reported here are based on the analysis of pooled data compiled by the Statistics and Data Processing Unit of WHO/HRP from the individual country databases. All data were checked for range and consistency using common validity rules and data were queried with the country teams where necessary. Analysis was performed using the SAS statistical package, version 6. The discontinuation rate for all reasons and the pregnancy rate were computed using life table methods. Women lost to follow-up were censored after the last visit recorded. In addition, a proportional hazards regression model was used to explore the impact of users' characteristics and attitudes on the chances of discontinuing the method for any reason before 12 months of use. Age group and country were included in the model and other variables selected using the forward step-wise algorithm.

The FGDs and in-depth interviews conducted by the country teams were hand-coded and translated by the country investigators.

Table 1
Characteristics of women who chose the diaphragm or other methods

	Diaphragm acceptors (n = 567)	Other method acceptors (n = 2258)	p-value
Age			
Mean (yr)	30.0	27.5	
SD (yr)	6.7	5.8	<0.001
<= 19 yrs	4.1%	5.9%	
20–24 yrs	19.6%	28.5%	
25–29 yrs	27.0%	31.4%	
30–34 yrs	22.8%	20.6%	
>= 35 yrs	26.6%	13.6%	<0.001
Education (years of schooling)			
None	2.2%	3.3%	
1–5 yrs	11.3%	21.9%	
6–10 yrs	27.1%	28.8%	
>= 11 yrs	59.4%	46.0%	<0.001
Education (completed level)			
None or primary	20.7%	29.9%	
Secondary	34.6%	44.0%	
College	10.6%	7.8%	
Higher	34.1%	18.3%	<0.001
Partner's education (completed level)			
None or primary	17.8%	25.7%	
Secondary	36.5%	42.2%	
College	8.9%	9.0%	
Higher	36.7%	23.1%	<0.001
Occupation			
Professional	21.2%	7.4%	
Office work or sales	14.8%	16.3%	
Domestic or farm work	1.9%	2.8%	
Housewife	40.1%	57.8%	
Other	14.1%	9.9%	
Unemployed	7.8%	5.7%	<0.001
Marital status			
Never married	17.1%	15.9%	
Currently married or in union	80.2%	81.7%	
Separated	2.6%	2.4%	0.73
Residence			
Urban	71.3%	72.3%	
Suburban	14.1%	13.9%	
Rural	14.6%	13.8%	0.85
Living conditions			
Running water	94.0%	94.4%	0.70
Electricity	98.4%	99.0%	0.36
Bathroom	92.6%	92.9%	0.93
Private bedroom	45.7%	43.9%	0.25

3. Results

A total of 567 women chose the diaphragm during the study period. Of these, 550 women enrolled in the follow-up study. The 17 women who chose not to enroll were not different demographically from those who enrolled.

3.1. Demographic characteristics

Table 1 compares the socio-demographic characteristics of the 567 women who chose the diaphragm (Colombia, 137; Philippines, 264; and Turkey, 166) and the sample of

Table 2
Sexual and reproductive history of women who chose the diaphragm or other methods

	Diaphragm acceptors (n = 567)	Other method acceptors (n = 2258)	p-value
Coital frequency			
Occasional	4.1%	5.9%	
Once/wk	19.6%	28.5%	
Twice/wk	27.0%	31.4%	
Three times/wk	22.8%	20.6%	
Four or more times/wk	26.6%	13.6%	<0.001
More than one partner			
Nulligravid	11.6%	4.1%	<0.001
Nulliparous	20.3%	11.5%	<0.001
Reproductive intention			
Want no more children	52.4%	49.6%	
Wait at least 3 yrs	15.5%	23.3%	
Other interval or not specified	31.9%	26.9%	<0.001

2,258 women who selected any other method (Colombia, 770; Philippines, 752; and Turkey, 736), the majority of whom chose a hormonal method (42%) or an IUD (48%). Diaphragm acceptors were slightly older on average and better educated, as were their partners. Diaphragm acceptors were more often employed outside the home and more often in a professional occupation. There were no significant differences in terms of marital status, urban/rural residence or the household amenities women enjoyed.

3.2. Sexual and reproductive history

Women who chose the diaphragm were significantly more likely than those who chose another method to report a high frequency of intercourse (4 or more times a week) (Table 2). The mean number of pregnancies was not significantly different between diaphragm users (2.7 [SD 2.1]) and other method users (2.6 [SD 2.0]), but a greater proportion of diaphragm acceptors had never been pregnant (< 0.0001). Women who chose other methods were more likely to want to wait at least 3 years for another child than the diaphragm acceptors (< 0.001).

3.3. Contraceptive history and reason for choosing the diaphragm

Women who chose the diaphragm were significantly more likely to have used a contraceptive method previously (Table 3). Diaphragm acceptors reported satisfaction with previous use of a barrier/chemical method more frequently than those who chose another method, and fewer of them were satisfied with IUDs or hormonal methods. Women who chose the diaphragm reported less frequently that they had stopped their previous method because of pregnancy than women who chose other methods.

Pregnancy prevention was the reason most commonly

Table 3
Contraceptive history

	Diaphragm acceptors (n = 567)	Other method acceptors (n = 2258)	p-value
Method(s) used previously			
Any method	94.9%	83.5%	<0.001
Hormonal	57.5%	48.5%	<0.001
IUD	41.3%	28.8%	<0.001
Barrier/chemical	50.6%	39.6%	<0.001
Natural	27.0%	17.2%	<0.001
Most recent method used:			
Hormonal			
Number of prior users	124	469	
Satisfied	53.2%	60.3%	0.184
Reason stopped			
Pregnancy	1.6%	8.5%	
Desire pregnancy	3.2%	9.7%	
Side effects or fear of side effects	67.0%	51.9%	
Inconvenient or expensive	4.0%	9.2%	
Fear of pregnancy	0.8%	0.7%	
Partner objection	0.0%	0.7%	
Other	23.4%	19.3%	0.002
IUD			
Number of prior users	90	239	
Satisfied	65.6%	78.2%	0.026
Reason stopped			
Pregnancy	1.1%	7.7%	
Desire pregnancy	5.6%	11.3%	
Side effects or fear of side effects	48.3%	51.1%	
Inconvenient or expensive	0.0%	1.4%	
Fear of pregnancy	0.0%	2.7%	
Partner objection	5.6%	0.9%	
Other	39.4%	24.9%	0.002
Barrier/chemical			
Number of prior users	116	316	
Satisfied	50.0%	38.0%	0.032
Reason stopped			
Pregnancy	6.1%	24.3%	
Desire pregnancy	0.0%	2.8%	
Side effects or fear of side effects	6.1%	6.3%	
Inconvenient or expensive	8.7%	4.4%	
Fear of pregnancy	26.1%	30.0%	
Partner object	24.3%	22.1%	
Other	28.7%	10.1%	<0.001

cited by women as important in their selection of a hormonal method or an IUD (42–52%) whereas only 23% of women who chose a diaphragm selected the method on the basis of its ability to prevent pregnancy (Figure 1). By contrast, women who chose the diaphragm more often cited safety and lack of side effects as reasons for their choice. The niche that the diaphragm filled for users, as elucidated in FGDs, was often related to side effects experienced with other methods. The diaphragm was perceived as a very safe and welcome alternative: "It is like a life-jacket for me, it saved me." "All other methods have some negative health effects."

A prominent distinction between women who selected the diaphragm and those who selected another method,

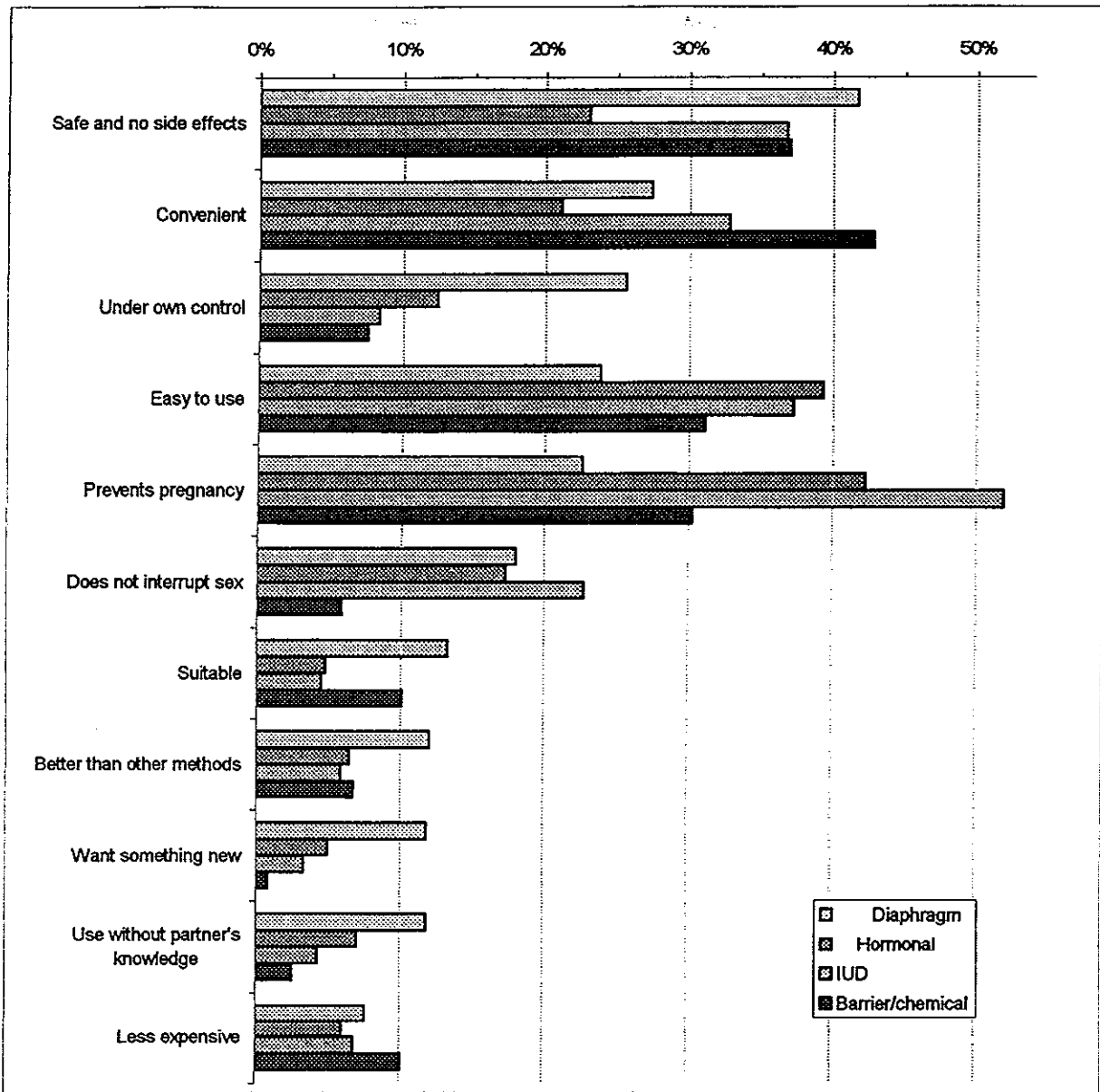


Fig. 1. Most frequently cited reasons for choosing new method (reasons given by at least 10% of users, ranked in order of reasons given by women who chose the diaphragm).

including another barrier method, was the importance given to user control (26% vs. 8–12%). Women emphasized in FGDs: “Now I am in control.” “I like it because I can manipulate it. I do not need to ask my husband. I am responsible.” Women also favored the diaphragm over other barrier methods (mainly the male condom) because it “doesn’t interrupt sex.”

3.4. Patterns of use and non-use

An objective of the study was to examine how the diaphragm was actually used by women and the factors affect-

ing use. Of the 550 women who agreed to participate in the follow-up study, 46 were found to have never used the diaphragm. The majority of these women cited problems, including partner objection and trouble inserting the diaphragm. Among some women who chose another method, the diaphragm was perceived as being difficult to use: “The procedure (insertion, removal, cleaning) appears tedious and time-consuming.” The size and shape of the diaphragm was unappealing to women who had not seen one before. “A friend of mine said ‘what a strange thing this is. It is like a UFO.’”

Of the 504 women who successfully initiated use, about

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Table 4
Factors associated with diaphragm discontinuation (proportional hazards regression model)

Factor	RR	(95% CI)
Country		
Turkey	1.73	(1.25, 2.39)
Colombia	0.83	(0.53, 1.29)
Philippines	1	(-ref-)
Age group		
<25 yrs	1	(-ref-)
25-29 yrs	0.69	(0.47, 1.02)
30-34 yrs	0.54	(0.36, 0.82)
>= 35 yrs	0.41	(0.27, 0.62)
Married or in regular union	1.94	(1.23, 3.05)
Partner likes method or is unaware of its use	0.33	(0.25, 0.45)
Used diaphragm for all acts of intercourse	0.48	(0.36, 0.64)
Chose diaphragm because safe and free from side effects	0.61	(0.45, 0.81)

63% complied with the instruction to use the diaphragm with every act of intercourse. Some who used the diaphragm less consistently also reported relying on withdrawal (11%), condom (5%) or periodic abstinence (6%). About 96% of women said they used spermicide with each insertion, and 78% kept the diaphragm in place for a minimum of 6 hours after intercourse as instructed. A few women (8%) used the diaphragm for other than contraceptive purposes, primarily for management of menstrual fluid, including during intercourse, or for menstrual protection while swimming.

The method continuation rate at 12 months was 57.2 (SE 2.4) per 100. A proportional hazard model was used to examine the significant factors associated with risk of discontinuing the diaphragm.

There were significant differences between countries with regard to the method discontinuation rates (Table 4). Women in Turkey were 1.7 times more likely to discontinue the diaphragm compared with those from the Philippines. In all 3 countries, older women were less likely to discontinue method use than were younger women. By contrast, women currently married or living with a partner were more likely to discontinue. The role of the partner's knowledge or attitude toward the diaphragm was important for method continuation. Those women who reported that their partner was either unaware of her using the method or who liked the method were almost 3 times less likely to discontinue than other women. Similarly, those who reported that they had selected the method because they perceived it as safe and free from side effects were less likely to discontinue than other women. Women who reported that they used the diaphragm for all acts of intercourse were less likely to discontinue method use than those who did not. However, this variable may only be associated with the discontinuation rate by reflecting the degree of comfort and satisfaction with the method, and not as an independent predictor. Exclusion of this variable from the model did not materially change the impact of the other variables, with the exception

of marital status that no longer contributed significantly to the regression model.

3.5. Pregnancies

There were 37 pregnancies within 4,106 months of use. The cumulative pregnancy rate was 5.5 (SE 1.1) per 100 at the end of 6 months and 10.1 (SE 1.7) per 100 at the end of 12 months (390 days.) The pregnancy rate was highest in Turkey (17.7, SE 6.1 per 100), midrange in Colombia (11.4, SE 3.3 per 100) and lowest in the Philippines (7.5, SE 2.0 per 100). Post-pregnancy interviews indicated that about 70% of pregnancies resulted from user rather than method failure, i.e. the method was not used correctly and consistently according to instructions. We were unable to calculate user- and method-failure (typical versus perfect use) pregnancy rates separately since this can only be done effectively with coital logs that the study did not use. Compared to Colombia and the Philippines, where abortion is not legal, the legality and acceptability of abortion in Turkey may have contributed to a less consistent use of the diaphragm in that country. Nearly two-thirds of diaphragm users in Turkey had previously had one or more induced abortions as compared with 40% of respondents in Colombia. The question on abortion was not asked in the Philippines. The mean number of previous abortions among those who selected the diaphragm was 1.8 in Turkey and 0.8 in Colombia. There was not a significant difference in mean number of previous abortions between women who selected the diaphragm and those who selected another method.

3.6. User perspectives

The diaphragm was described as "something that modern women have been waiting for." In the eyes of some users, the diaphragm had the dual advantage of being a non-systemic method that could be used occasionally and only as needed: "The diaphragm has fewer side effects than the pill or IUD. I want a method that works only when my husband (who works abroad) is home." "My relationship is sporadic so the diaphragm gives me more freedom." "I want something that is natural and more effective than rhythm or withdrawal."

Ninety percent of women who selected the diaphragm completed at least one follow-up form. Of these, 73% reported either to "like" the diaphragm or "like it very much", and half preferred it to other methods they had tried. After becoming familiar with using the diaphragm, the main reasons cited (multiple reasons were permitted) for liking the diaphragm were consistent with those given for selecting the diaphragm in the first place, in effect, that it was safe and free of side effects (61%), and that it was a method under the user's control (59%). In FGDs, the most determined users were women who had experienced side effects with other methods such as deep vein thrombosis, weight gain, mood swings and dizziness, and for whom the diaphragm was a "rescuer."

Successful users tended to be very enthusiastic about the method. *"The diaphragm for me is like a personal friend." "I will always use a diaphragm. I want children in the future. After the pregnancy I will use the diaphragm again, until I do not need it."* Nearly a third of women liked the diaphragm more after using it for at least 2 weeks while 12% felt less favorable. *"You realize that the diaphragm is in fact very simple as you continue using it. At the beginning it is frightening."* Some women felt strongly that the diaphragm should become more widely known to benefit others: *"You should inform all other women about the diaphragm. You should make campaigns."*

Most diaphragm users (70%) had not experienced any problems at the time of the first follow-up. The most common problems encountered by the remainder were that the diaphragm was too slippery (11%), difficult to remove (9%), felt by the partner, (8%), or felt to be not in the right place (8%).

3.7. Partner attitudes

For women who did not use the diaphragm consistently with every act of intercourse, some were trading off use of a barrier method with the partner: *"We share responsibility. One day he used a condom, the next time I used the diaphragm."* The majority of women (58%) reported that their partners liked the diaphragm. *"My husband prefers the diaphragm to the condom." "My husband likes the diaphragm very much. He calls it our 'hat' and jokes that he will never go out without putting on a hat." "My husband boasts about the diaphragm and recommends it to his friends."*

Having a woman-controlled barrier method was an essential feature to some. More than a quarter of diaphragm users in Turkey (29%), said they were unable to make their partners use condoms when they wanted them to. *"I use it when he is drunk. I know that he will not be able to withdraw then. He will not feel the diaphragm either."* Only 9% of women said that their partners were not aware of the diaphragm at all. *"I did not tell my husband. He does not want me to use anything and I do not want any more children."* Some women said their partners complained of feeling the diaphragm. *"You feel the edge of it, it squeezes your organ."*

3.8. Provider attitudes

Provider prejudices against the diaphragm diminished over time, and participating providers in all 3 countries became convinced of the niche that the diaphragm filled for their clients. *"The first time I saw a diaphragm, I did not like it. My dislike decreased when I learned how it was inserted and removed. As the study progressed and I started seeing satisfied users, I got used to the diaphragm."* *"Most women were surprised to find out that the diaphragm neither caused any pain nor could be felt."* Some providers became diaphragm users themselves: *"I used the diaphragm for a*

year during the study, but I did not mention this to my clients." Despite training, some providers lacked knowledge that the diaphragm offered some protection against STDs and 6 of the 8 providers interviewed in the Philippines said they did not believe that the diaphragm provided any such protection. Assumptions about appropriate candidates for the diaphragm persisted. Women thought not to be good candidates for the diaphragm were those who had too much work in the house and could not afford the time to insert, remove and clean it. Good candidates would include educated women and those who are *"open-minded," "positive thinkers"* and *"willing to try new things."* On the other hand, some providers said: *"Any woman who says 'I can use it' can use it. (The most important thing is) the woman's self-confidence and determination."*

Some health professionals, especially physicians, complained that providing the diaphragm, including fitting and practice, was too time-consuming, generally requiring at least 20 min. On the positive side, providers asserted that they had modified their ways of working following their training and participation in the project, and now gave clients more information and opportunities to ask questions. Providers claimed they were more tolerant and predisposed to help, and that these changes benefited not only diaphragm users but all of their clients. Providers helped clients gain knowledge about their bodies by using a mirror to show women their cervix or a transparent anatomic model to demonstrate where the diaphragm rests and how to insert and remove it.

3.9. Satisfaction with service provision

Women who already knew about the diaphragm were pleased that it was finally available. *"I had heard about the diaphragm for many years, but I could not get it in this country."* Most women, however, heard about the diaphragm for the first time at the clinic and 77% of those who selected it made the decision during the counseling session. Satisfaction by participants with clinics and providers was usually very high: *"They take very good care of you. I congratulate the staff. I brought flowers to all of them at my first follow-up."* Participants were *"happy to be followed so closely"* and delighted that they *"could reach someone for questions whenever they had one."* *"The counselor was objective. She did not show preference for any method. She simply informed about the options."* Some clients were not informed about the diaphragm in their counseling session. *"I was about to leave the clinic when I saw a poster of a diaphragm on the wall. I went back to the nurse and asked about it."*

3.10. Attitudes of non-participating providers

Although some attempt was made in each setting to inform non-participating providers about the diaphragm, misinformation and ignorance about the diaphragm were

difficult to eradicate. "A lady physician I met said that diaphragm would slip into my womb and I became very anxious." Few referrals for the diaphragm were made by providers outside of the study. "My gynecologist said that diaphragm is an old, out-of-date method." In-depth interviews with non-participating providers in Turkey revealed that many had only textbook knowledge of the diaphragm. They assumed that its displacement by oral contraceptives and the IUD was due to inherent inferiority of the diaphragm. "It is not efficient, only 60%." "Women cannot learn to insert it." "It is only good for Western women who have irregular relations." "It covers the cervix. It is going to decrease the sexual pleasure of woman." [It is] "a foreign object in your vagina. You will get obsessed with it." "The diaphragm has no place in our practice."

4. Discussion

From the perspective of users, it is clear that many women discontinue use of contraceptives because of side effects and health concerns [15]. The diaphragm offers a safe alternative, free of side effects, for those who have had problems with other methods. Women who chose the diaphragm on the basis of these features were significantly more likely to continue using it, in part, perhaps, because they had exhausted, or were not satisfied with, other options. Providers need to be aware of the legitimate and unique benefits that the diaphragm offers and of how their own judgments and preconceptions can interfere with a client's choice that may have been beneficial. While providers may be most concerned about the effectiveness of contraception, a woman's personal priorities may place absence of side effects and health risks as high as pregnancy prevention.

The profile of a typical diaphragm user from this study (older, better educated) may reflect biases on the part of the provider. Providers may neglect to mention the diaphragm when counseling younger or less well-educated women whom they perceive to be less responsible or competent. Older women may be more comfortable with their bodies, and have had broader experience with other methods, both of which can facilitate successful diaphragm use. In a study of injectable contraceptives, investigators in Turkey observed that an educated/professional woman could more readily decide to use a new method on her own after a counseling session [16]. The diaphragm may also be seen as inappropriate for poor women who lack privacy or running water [12]. In contrast to these results, young, less educated and poor women in all 3 countries became successful users of the diaphragm. These results concur with those of a study conducted in a poor neighborhood of India, where lack of amenities did not prevent women from successfully using the diaphragm [17]. Obstacles may be overcome when services are more personalized and of a better quality, as was the case in some participating clinics successfully serving less educated, rural clients [18].

The higher reported frequency of sexual intercourse among diaphragm users is difficult to explain. In Turkey, about 5% of diaphragm users had more than one sex partner during the last 6 months, implying either multiple partners or the beginning of a new relationship, both of which may involve more frequent intercourse.

The unfamiliarity of the diaphragm to providers and clients hindered recruitment for the study. To avoid promoting the method and, therefore, potentially biasing the results, restrictions were made against advertising the diaphragm outside of the clinic. A mechanism of raising public awareness is needed to counteract the observed scenario that women only learned about the diaphragm when coming to the clinic, and most arrive with another method in mind. Ultimately, after the method became more widely known in the community, 24% of women who joined the study said they learned about the diaphragm from a friend.

4.1. Provision of the diaphragm as an indicator of quality

There are numerous reasons to recommend adding the diaphragm to the existing method mix. It is a method under the control of women that is virtually free of side effects. It provides some protection against cervical STDs, and is less expensive (on a per use basis) than the female condom. It is well suited to women who have intermittent sexual relations, including young women, provided they are properly counseled. The 12-month continuation rate compares favorably with that of oral contraceptives [19,20] and is considerably higher than continuation of Depo Provera as found in a recent study [21]. It is mid-range with respect to previous studies of the diaphragm [21–25]. The perceived low efficacy of the diaphragm is challenged by the 12-month cumulative pregnancy rate of 10.1 per 100 found in this study. Not only is this failure rate at the low end of reliable published estimates, which range from 6 to 18.8 [20], but it is within the range of typical use failure rates for the male and female condom [26]. Even oral contraceptives have been found to have failure rates as high as 25% in actual use [27].

Good counseling is essential for provision of the diaphragm. Providers and counselors must be trained and comfortable when talking about sexuality, foreplay, intercourse, self-examination of genitals, and interaction of the couple before and during intercourse. They must be aware also of gender-power relations and the client's control over the circumstances under which sexual relations take place. It may be more cost-effective and equally efficacious to train nurse/midwives or other non-physician health professionals to perform these tasks. A reliable supply of both diaphragms and spermicidal jelly must be assured.

What is essential for provision of the diaphragm is nothing more than was called for in the ICPD Programme of Action for quality reproductive health services. Adding the diaphragm to the method mix in the developing world is a challenge not because of the diaphragm's inherent charac-

teristics, but because the current level of services women receive are often inadequate to support it. This study has shown on a small scale that this goal can be achieved with training and supervision, at public as well as private clinics, and using the resources that are already available. When this much is done, not only are developing country women able to successfully use the diaphragm, but the introduction of the diaphragm can become a catalyst for improving the quality of services received by all clients.

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