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DHS ANALYTICAL REPORTS

Mass Media and Reproductive Behavior in Pakistan, India, and Bangladesh



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**Demographic and Health Surveys
Analytical Report No. 10**

**Mass Media and
Reproductive Behavior
in Pakistan, India, and
Bangladesh**

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May 1999

Recommended citation:

Westoff, Charles F., and Akinrinola Bankole. 1999. *Mass Media and Reproductive Behavior in Pakistan, India, and Bangladesh*. Analytical Reports No. 10. Calverton, Maryland: Macro International Inc.

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Preface

One of the most significant contributions of the DHS program is the creation of an internationally comparable body of data on the demographic and health characteristics of populations in developing countries. The *DHS Analytical Reports* series and the *DHS Comparative Studies* series examine those data across countries in a comparative framework, focusing on specific topics.

The overall objectives of DHS comparative research are to describe similarities and differences between countries and regions, to highlight subgroups with specific needs, to provide information for policy formulation at the international level, and to examine individual country results in an international context. Whereas *Comparative Studies* are primarily descriptive, *Analytical Reports* take a more analytical approach.

The *Analytical Reports* series comprises in-depth, focused studies on a variety of substantive topics. The studies are based on a variable number of data sets, depending on the topic under study. A range of methodologies is used, including multivariate statistical techniques.

It is anticipated that the *Analytical Reports* will enhance the understanding of significant issues in the fields of international population and health for analysts and policymakers.

Martin Vaessen
Project Director

Acknowledgments

The authors would like to thank The David and Lucile Packard Foundation for support of the analytical work done

at Princeton University. The basic funding for the Demographic and Health Surveys has been provided by the U.S. Agency for International Development. We also appreciate the cooperation of the Ministry of Population Welfare in Pakistan and The Population Council for making the data available from the 1994-95 Contraceptive Prevalence Survey. Special thanks are due to Ronald Freedman of the University of Michigan for his comments and suggestions.

Executive Summary

The central question addressed in this research is whether regular exposure to the mass media, especially to radio and television, influences family planning attitudes and behavior. Two types of media exposure are of interest: (1) general exposure to radio and television, on the assumption that exposure to a variety of modern ideas can undermine traditional supports for high fertility; and (2) exposure to media messages, specifically on the topic of family planning that, presumably, can increase awareness of and influence contraceptive use.

The data are based on five national samples of women of reproductive age: Pakistan in 1990-91 and in 1994-95, India in 1992-93, and Bangladesh in 1993-94 and 1996-97. Interviews with husbands also were included in the earlier survey in Pakistan and in both surveys in Bangladesh. All but one of these surveys (the later Pakistan Survey) were conducted within the Demographic and Health Surveys (DHS) program or followed the standard DHS format (the India Survey).

The measures of family planning attitudes and behavior include knowledge of a modern method of contraception, approval of the idea of family planning, whether the subject has been discussed with the husband, ever use and current use of a method, intention to use a method, whether the desired number of children has been discussed with the husband, the desired number of children, and whether more children are wanted.

Because both media exposure and reproductive behavior are associated with urban residence, regional differences, education, socioeconomic status, age and number of children, measures of these variables were included routinely in the multivariate analyses, as was each type of media exposure (including print media where available). The analysis focuses on whether each particular type of media exposure is significantly associated with a

fertility or family planning measure over and above the influence of the other media variables and, at the same time, is independent of joint relationships with relevant background variables.

The results clearly support the central thesis that mass media exposure is directly associated with reproductive behavior in all three countries, although some types of media seem more influential in some countries and at different times. Both exposure to the media in general and exposure to specific family planning media messages are independently associated with reproductive behavior. The robustness of the relationships is striking. In two-thirds of the 156 multivariate analyses conducted (for all married women), the media exposure variables showed significant effects. Similar results were found for illiterate women and for men. Approval of family planning and ever use of contraception are most consistently related to the media variables; whether more children are wanted shows the least consistency.

The important methodological qualification that is repeatedly noted is that the associations are derived from cross-sectional surveys that preclude drawing unambiguous causal inferences. However, the replication of the relationships in the three countries that was also observed in an earlier analysis of DHS data from seven African countries, including a longitudinal study (Westoff and Bankole, 1997), certainly increases confidence in the likelihood of causal connections. Moreover, even within the constraints of the cross-sectional design there is the likelihood that media communications on family planning may select many women with an unmet need for family planning who have not yet translated into action their intention to use a method. In that sense, the media, especially through targeted messages on family planning, may facilitate the transition by legitimizing such behavior.

1 Introduction

Theories are abundant to explain the spread of contraception and the decline of fertility in the developing world. The changes have been attributed to factors that include increases in income and in education, the improvement in the status of women, the decline of infant and child mortality, and the erosion of religious and traditional authority. All are plausible explanations, and all no doubt have some validity. Nevertheless there are many examples of populations where fertility has declined in the absence of such trends and others where it has not declined despite the presence of such trends. One social change that has received little scientific attention in the theorizing has been the spread of the mass media, particularly radio and television, which can transmit modern ideas about childbearing and the competition of alternative lifestyles. We have recently published an extensive analysis of the impact of exposure to the media on reproductive behavior in Africa (Westoff and Bankole, 1997) and have been impressed with the power and persistence of the association between such exposure and the use of contraception and attitudes toward childbearing. The basic connection is straightforward: that modern ideas can profoundly influence peoples' attitudes and behavior even in areas as traditionally imbedded as those surrounding reproduction. Exposure to the mass media, which is growing so rapidly throughout the world, can communicate such ideas in music, news reports, soap operas, documentaries, and advertising. Obviously, the content of much if not most of such exposure is not directly or even indirectly related to childbearing, but certainly some of it is. The premise of our research is that the greater the amount of exposure to the mass media, the more likely it is that modern ideas about family, childbearing, consumption, individualism, and the like will be communicated.

The research reflected in this report focuses on Pakistan, India, and Bangladesh. In Pakistan, the population is now 138 million and is still growing rapidly, just below 3 percent per year. The total fertility rate (TFR) is 5.6 births per woman and is only beginning to show some signs of decline. The contraceptive prevalence rate (CPR) is still low: only 12 percent of married women were using any form of contraception in 1990-91. The rate had increased to 18 percent by 1994-95. The government officially views the birth rate as too high but, despite official approval for many decades of government family planning program efforts, there has been little change.

by next year (2000) and to reach that of China by the middle of the century, when both countries are projected to have populations of 1.5 billion. Unlike the situation in Pakistan, however, the fertility rate in India is declining rapidly; the latest estimate is a total fertility rate of 3.4 births per woman with a contraceptive prevalence rate of 41 percent (three-quarters of which is sterilization). The annual rate of population growth is 1.9 percent. The demographic situation in India is highly varied. Fertility is very low in the south and the west and high in many states in the north and central regions. The range of the contraceptive prevalence rate among the 25 states of India extends from a low of 13 percent in Nagaland to a high of 63 percent in Kerala. India has had a population program since 1952 and currently aims for replacement fertility by 2016. Part of the program includes efforts to promote both family planning and a small-family norm through the mass media. Since 1996, India's Family Planning Program has abandoned contraceptive prevalence targets and has shifted the emphasis to decentralized participatory planning that takes account of the quality of family planning services.

The demographic situation in Bangladesh has changed rapidly in recent years as a consequence of an ambitious and successful family planning effort. The contraceptive prevalence rate has increased from 8 percent in the early 1970s to 45 percent in 1993-94 with a commensurate drop in the total fertility rate from 6.3 to 3.4. A more recent survey in 1996-97 now estimates the rates to be 49 and 3.3, respectively. The success of the Bangladesh program has captured the attention of professionals in the population and family planning field. In brief, its success can be attributed principally to the determination of the government and the investment of international donor agencies. A comprehensive nationwide program of family planning with maternal and child health services, implemented door-to-door by some 30,000 female fieldworkers, as well as media and other informational activities, has combined to promote a small-family norm and to increase the use of contraception for both spacing and limiting purposes. Challenges remain because of the tremendous potential for population growth built into the youthful age structure. The medium population projection is for 150 million people by the year 2010, a significant increase from 122 million in 1997.

The population of India is expected to be one billion

2 Data and Analysis

The research is based primarily on information collected by the Demographic and Health Surveys, a program of national sample surveys designed to assess fertility and contraceptive trends and needs along with data on child health. The program, sponsored by the U.S. Agency for International Development (U.S. AID), has been in existence since 1986. The survey in Pakistan was conducted in 1990-91 with interviews with 6,611 ever-married women of reproductive age; a later survey, the Pakistan Contraceptive Survey of 1994-95, which sampled 7,922 married women, is also included in the analysis (Ministry of Population Welfare and The Population Council, 1995). In India, an unusually large sample of nearly 90,000 ever-married women was interviewed in 1992-93, a sample designed to be large enough to represent each of the 25 states in the country. The DHS survey in Bangladesh took place in 1993-94 with interviews with 9,640 ever-married women and was repeated in 1996-97, with 9,127 interviews.

The present analysis focuses on both Pakistan and Bangladesh as a whole and on India as a whole and on several subdivisions of the country by region. The strategy of the analysis is to examine two kinds of mass media variables. One is general media exposure—whether women are exposed regularly (at least weekly) to radio and television. In Pakistan, information was also collected on weekly reading of newspapers. The second media variable measures whether the woman has heard messages specifically about family planning on radio or television in the past month. The general media exposure is regarded as a possible window on the modern, frequently Western, world while the media “messages” variable is obviously specific to the area of family planning. We will examine the association of the measures with reproductive behavior and attitudes with a procedure that permits evaluating the “effects” of each type of media exposure over and above the “effects” of the other type.

The analysis focuses on currently married women, but in Pakistan and in Bangladesh a sample of the husbands of the women was also interviewed independently. That permits a parallel analysis of married men as well as of the married couple.

We are concerned here with whether exposure to the media is related to the use of contraception and to attitudes toward childbearing. In all three countries, we examine the

association with whether contraception has ever been used and with whether it is currently being used. For women not currently using any method, the reported intention to use is also studied. The women were also queried about whether they approve of the idea of family planning and whether they and their husbands have discussed family planning (which is particularly interesting in light of the measure of media messages on the subject). In Pakistan, where knowledge of family planning in 1990-91 was less than universal (almost a quarter did not recognize any method), that variable is also examined but several years later in Pakistan method recognition had risen to 90 percent. In India over 95 percent recognized at least one method while in Bangladesh recognition of a least one method is now universal.

Three measures of attitudes toward childbearing are included in the three countries: whether the number of children has been discussed with the husband, whether the woman wants to have more children, and the total number of children desired. In Pakistan, where a large fraction of women (61 percent in 1990-91) gave a nonnumeric response to the question (typically indicating it is up to Allah), a measure was constructed based on whether or not the response was numeric.

One of the methodological problems that plague this kind of research is the difficulty of determining time sequences of the exposure and cause and effect. What can be measured in the cross-sectional surveys is statistical association; imputing cause and effect is technically impossible. We can demonstrate, for example, that media exposure is significantly correlated with contraceptive use even controlling for education and rural-urban residence and other relevant covariates, but we cannot sort out the possible processes of self-selection. It may be that women who are predisposed (for whatever reasons) to use contraception are also predisposed to listen to the radio or watch television, which is a very different interpretation than concluding that media exposure induces them to use contraception. Perhaps women report having heard media messages about family planning because they are using a method rather than using a method because they heard about it through the media. In earlier work on a longitudinal study in Morocco, we were at least able to control the time sequence of media exposure and subsequent contraceptive practice. However, the causal imputation technically requires an experimental design in which one subpopulation is exposed and another is not along with “before” and “after” measurements of the key

variables. Such a study has been completed in Tanzania (Rogers et al., 1998) but even there many difficulties stood in the way of an unambiguous causal inference.

What we can do is to examine the association between media exposure and the battery of reproductive measures while simultaneously controlling not only for other media variables but also for an extensive number of different variables that might be operating to influence the association. We are able to “hold constant” age, number of children, rural-urban residence, education, religion, region

of residence, husband’s occupation, whether the house has electricity, and several measures of economic status. If the initial association survives the tests, it will have at least demonstrated an impressive robustness. That will not “prove” the causal connection, but a failure to survive the tests would certainly cast any causal claims into serious doubt. It is also important to note that “intentions to use a method in the future” and whether the woman wants more children are less vulnerable to confusion about the time sequence of media exposure and reproductive behavior.

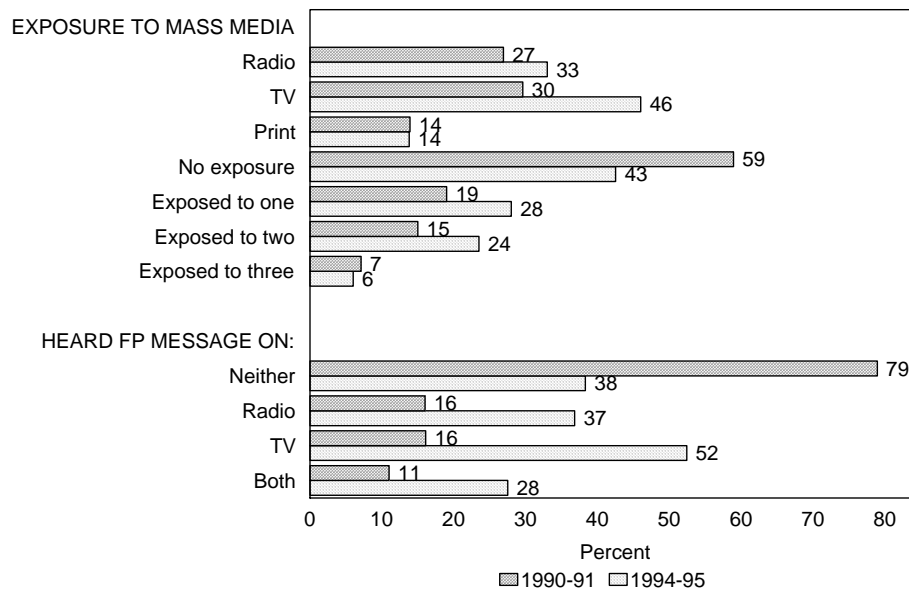
3 Pakistan

3.1 MEDIA EXPOSURE

In 1990-91, only slightly more than a quarter of married women in Pakistan reported listening at least weekly to the radio or watching television; even fewer (14 percent) said that they read a newspaper at least once a week (Figure 3.1). A total of 59 percent were not exposed to any of the three media. As one would expect, even smaller fractions reported having heard messages about family planning on radio or television. Judging from the survey conducted in 1994-95, there has been a significant rise in exposure to television in general, from 30 to 46 percent. The increase in radio listening has been more modest, from 27 to 33 percent, and no increase in newspaper reading is evident at all.

A substantial increase in exposure to specific family planning messages seems to have occurred especially through television, rising from 16 percent in 1990-91 to 52 percent in 1994-95. A less dramatic but nevertheless impressive increase in reports of radio family planning messages is also evident, from 16 to 37 percent. The actual extent of the increase in exposure cannot be determined because in the earlier survey the women were queried about having heard or seen messages in the past month while in the more recent survey the time reference was “ever seen or heard.” The messages received from the sources are more than simply information about methods and sources of supply; in the 1994-95 survey, the main messages mentioned by the women related to the advantages of having fewer children.

Figure 3.1 Percentage of currently married women exposed to the mass media at least once a week, and the percentage who heard a family planning (FP) message on radio or television in the past month, Pakistan



Source: DHS Survey 1990-91, Pakistan
Contraceptive Prevalence Survey of 1994-95

3.2 CONTRACEPTIVE BEHAVIOR

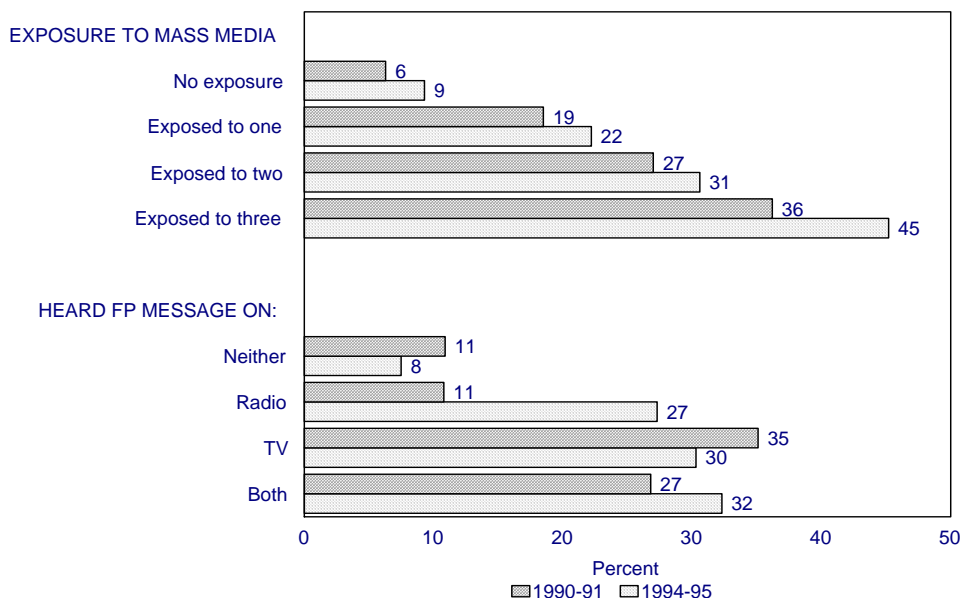
Media exposure in Pakistan is associated with all the measures of contraceptive behavior examined. Recognition of at least one method increases from 69 percent among women who are not generally exposed to any of the mass media to 95 percent among those exposed to radio, television, and newspapers. Having heard family planning messages on either radio or television increases method recognition by about 20 percentage points. The percent who have ever used a method rises from 10 percent for women with no general media exposure to 51 percent among women exposed to all three types of media; the difference in the proportions ever using for women reporting having heard family planning messages on radio is 17 percentage points and 25 points for television. Because recognition of at least one contraceptive has become almost universal in Pakistan, probably in part due to media efforts, that analysis is skipped for the more recent survey.

An important test is whether media exposure is associated with current use of a method. The basic result

depicted in Figure 3.2 shows a progressively greater use of contraception with increased media exposure and also some evidence that the communication of family planning messages, especially on television, increases use. Those findings also are demonstrated in the later survey in Pakistan.

The other measure of contraceptive behavior of interest is whether women not currently using a method intend to use in the future. The relationship of media exposure to such an intention follows essentially the same pattern as that with current use (Figure 3.3). As noted above, this is important because the media exposure precedes the event of subsequent contraceptive practice; moreover, there is clear evidence from the longitudinal study in Morocco that intention to use a method is a very good predictor of future use (Curtis and Westoff, 1996). In the four years between the Pakistan surveys, the proportion of nonusers who intend to use a method increased substantially, from 16 to 37 percent, and shows a substantial rise in the association with media exposure.

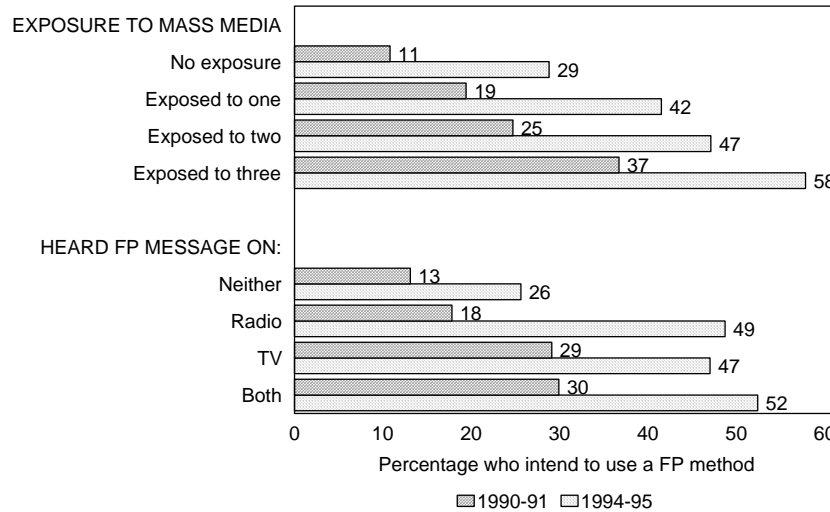
Figure 3.2 Percentage of currently married women who are currently using contraception, by exposure to mass media, Pakistan



Note: Excludes currently pregnant women

Source: DHS Survey 1990-91, Pakistan
Contraceptive Prevalence Survey of 1994-95

Figure 3.3 Among currently married women who are not currently using a contraceptive method, the percentage who intend to use a family planning (FP) method, by exposure to mass media and whether or not they heard a FP message on radio and/or TV, Pakistan



Source: DHS Survey 1990-91, Pakistan
Contraceptive Prevalence Survey of 1994-95

Thus, all of the measures of contraceptive behavior show an association with both kinds of media exposure in the expected direction. The next question is whether the associations are independent of different factors that could be correlated with both media exposure and contraceptive behavior.

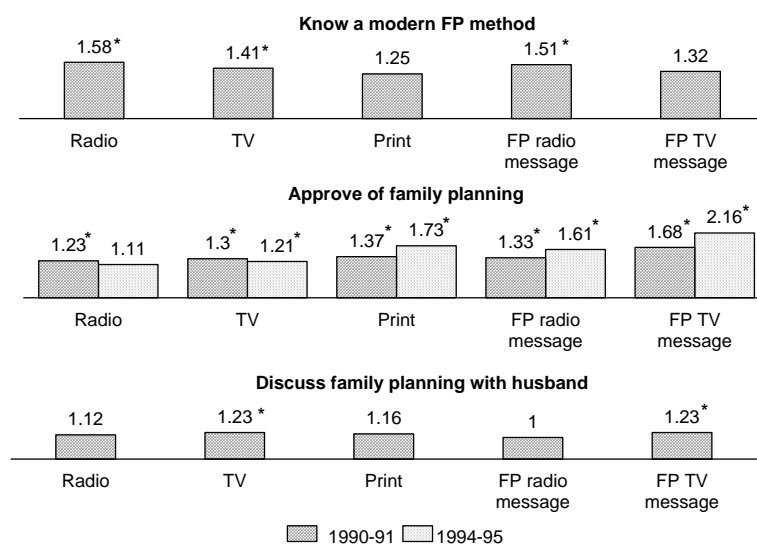
3.3 MULTIVARIATE ANALYSES

The amount of formal education is related to media exposure of all kinds as it is to contraceptive behavior. Other covariates include urban residence, which is especially linked with television, husbands in white-collar occupations, and several measures of economic status. Residence in the Punjab province is also associated with both greater media exposure and contraceptive practice. Some other variables relate to one or two but not all of the types of media exposure. To be conservative, we have included all the controls: age, number of children, region, urban-rural residence, husband's occupational status, whether the house has electricity, and ownership of a refrigerator, a bicycle, or a motorcycle in all of the analyses. In the later section on India, we also included religion in such analyses. We use a logit regression procedure in which the dependent variables are dichotomized (for example, the woman is or is not using contraception). The statistic of

interest is the odds ratio that estimates, for example, the extent to which a particular media type increases the likelihood of using contraception. In Figure 3.4 we see (top panel) that regularly listening to the radio increases the odds of knowing a contraceptive method by 58 percent, taking into account simultaneously all of the control variables as well as the other media. A similar 51 percent increase is estimated for having heard radio family planning messages net of all other variables including general exposure to the radio.

The odds ratios shown in the presentations are what remains of the magnitude of the association when all the controls are imposed. To make the point clearer, we illustrate with the association between watching television and recognizing at least one contraceptive method (in 1990-91). The result in Figure 3.4 indicates an odds ratio of 1.41. Without any controls at all, the odds ratio was 5.23 (not shown) which means that women who watch television are more than five times more likely to know a method than women with no television exposure. We then examined the association with television simultaneously in conjunction with all the other types of media exposure. This reduced the odds ratio to 2.74 (not shown), which can be interpreted to

Figure 3.4 Odds ratios of the effects of exposure to mass media on knowledge of contraception, on approval of family planning (FP), and on discussion of family planning with husband, with all controls, for currently married women, Pakistan



* Statistically significant

Source: DHS Survey 1990-91, Pakistan
Contraceptive Prevalence Survey of 1994-95

mean that television exposure increases by that amount the likelihood of knowing a method even when the correlation with exposure to other media is taken into account. And finally, when all the other life-cycle, socioeconomic, and residential covariates are included as well, we reach the 1.41 result. That is the statistic most appropriate for the analysis because it insulates the interpretation from such questions as, for example, whether the association might occur because television viewers and those knowledgeable about contraception tend to live in cities or to be more educated, and so on. It also protects against speculation that the association might occur because of the family planning messages on television, as that variable is also included in the equation. Theoretically, the observed final value of the odds ratio could be further attenuated if other unmeasured controls that might be imagined were also included.

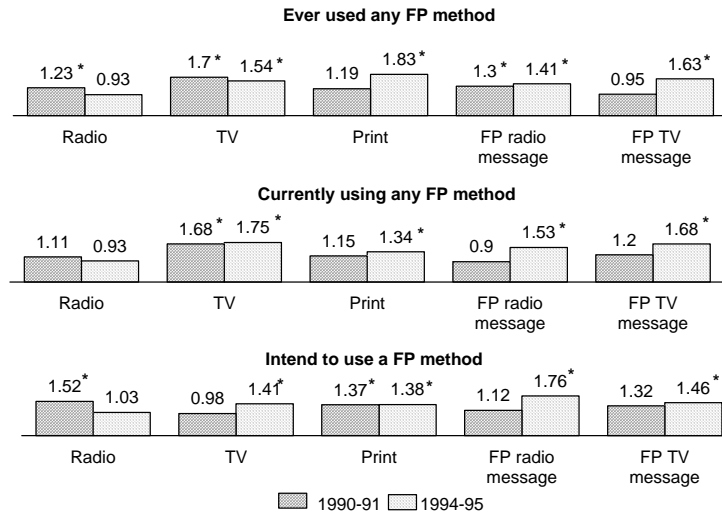
In 1990-91, the idea of family planning was approved by 54 percent of Pakistani women. Exposure to the mass media plays a role in that attitude, as indicated in Figure 3.4 (middle panel). Each of the five types of media shows a statistically significant positive relationship with approval of family planning. The strongest association is

with having heard family planning messages on television, which increased the odds of approval by 68 percent. By 1994-95, approval of family planning had increased to 62 percent and a similar pattern of association with the media measures is evident and is stronger with the print media and with family planning messages.

In 1990-91 in Pakistan, a large majority of women (78 percent) had never discussed the subject of family planning with their husbands. Women who watch television or who report having heard family planning messages on television are more likely to have had such discussions with their spouse (bottom panel of Figure 3.4—that measure was not included in the 1994-95 survey).

The association of the media with whether the woman has ever used a method of contraception (Figure 3.5) shows significant odds ratios particularly for television, and lower values for radio exposure in general. In the later survey, the odds ratios are higher for the print media and especially for exposure to television messages on family planning.

Figure 3.5 Odds ratios of the effects of exposure to mass media on ever use and current use of family planning (FP), and on intention to use a FP method, with all controls, for currently married women, Pakistan



* Statistically significant

Source: DHS Survey 1990-91, Pakistan
Contraceptive Prevalence Survey of 1994-95

Whether or not women are currently using any method of contraception is associated with general exposure to television in both studies and in 1994-95 with exposure to the print media and to both radio and television messages on family planning (the middle panel of Figure 3.5). At neither time did exposure to radio in general show any effect on current use.

Whether nonusers intend to use a method shows the same associations with the different types of media exposure in 1994-95 as it does with current use. In 1990-91, general exposure to radio but not television had shown an association.

We also performed another analysis in which the cumulative “effect” of exposure to more than one of the media in general (excluding specific family planning messages) indicates that women exposed to all three media are about twice as likely to use or intend to use a method as those exposed to none of the three. The results are not presented here because they are more vulnerable to the self-selection bias noted earlier. Women who listen to the radio and watch television and read newspapers regularly are much more self-selected and, even with all the controls imposed, the separation of cumulative impact from self-selection becomes more difficult.

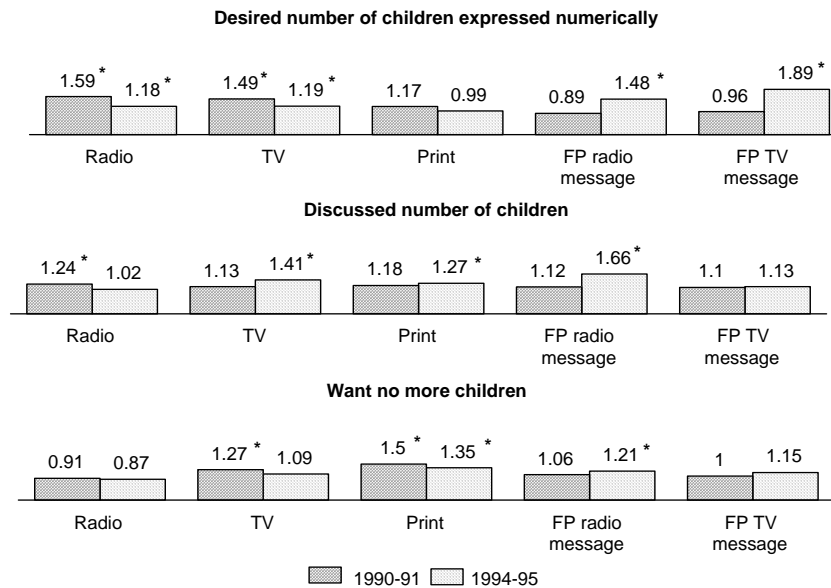
3.4 REPRODUCTIVE ATTITUDES

We have examined three measures of reproductive attitudes in connection with mass media exposure: whether the desired number of children is reported in numeric or nonnumeric terms; whether the woman and her husband have ever discussed the number of children they would like to have; and whether the woman wants more or wants no more children.

Whether women gave a numerical response to a question on the desired number of children or said that it was “up to Allah” (the most common nonnumeric response) is associated with general radio and television exposure in both surveys (top panel of Figure 3.6). In the later survey, having been exposed to family planning messages on television and radio shows a positive association.

In 1990-91, only a third of the Pakistani women reported that they had ever discussed with their husbands the number of children they would like to have, but by 1994-95 the proportion had almost doubled. Although the likelihood of having such a discussion increases slightly with media exposure in the earlier survey (middle panel of Figure 3.6), only the radio reaches a statistically significant level with all the controls imposed; in the later survey significant effects are shown with general television and print exposure as well as with radio family planning messages.

Figure 3.6 Odds ratios of the effects of exposure to mass media on reproductive attitudes of currently married women, with all controls, Pakistan



* Statistically significant
FP = Family planning

Source: DHS Survey 1990-91, Pakistan
Contraceptive Prevalence Survey of 1994-95

Women who read newspapers or magazines regularly are more likely to want no more children (bottom panel of Figure 3.6), an association that appears in both surveys. In 1990-91, women who watch television are specifically more likely to want no more children than women who do not. A similar effect is found for exposure to family planning messages on the radio in the 1994-95 survey.

3.5 ILLITERATE WOMEN

Radio and television are potentially very important sources of new ideas, particularly for women who cannot read and write. In Table 3.1, we summarize the same kinds of analyses for illiterate women in both surveys as those described for all married women. One advantage of the analysis for this subset of the population is that it removes the variable of education, which is such a strong covariate of media exposure, contraceptive behavior, and reproductive attitudes. In general, illiterate women are somewhat less exposed to the different media than are literate women.

Listening to the radio regularly shows the most consistent set of results with all but one of the fertility variables examined in the 1990-91 survey. Only the measure of reproductive intention fails to show a significant effect of

general radio exposure. With that exception, women who listen to the radio regularly are significantly more likely to know about contraception, to approve of family planning, to have ever used a method, to be currently using contraception, or to intend to use a method. They are also more likely to have discussed the number of children desired with their husbands and to respond numerically to the question on the desired number of children. Results are based on multivariate analyses with all the other media and other covariates included. In the 1994-95 survey, however, the strong association with radio exposure diminishes.

Regular exposure to television is less consistent than radio although it does relate to all three of the reproductive attitudes. Its effect on contraceptive behavior, however, is limited to knowledge, discussion with spouse, and ever use of a method. In the later survey, the effects of television are somewhat greater. In general, apart from the greater access to radio among illiterate women, there are probably also more programs in local languages on radio than on television.

Table 3.1 Odds ratios of the effects of exposure to mass media on reproductive attitudes and behavior of illiterate married women, with all controls, Pakistan 1990-91 and 1994-95

	Radio		Television		FP radio messages		FP TV messages	
	1990-91	1994-95	1990-91	1994-95	1990-91	1994-95	1990-91	1994-95
Know modern method	1.71	—	1.46	—	1.74	—	ns	—
Approve of family planning (FP)	1.28	1.18	ns	ns	1.32	1.69	2.01	2.26
Discuss family planning with husband	1.34	—	1.30	—	ns	—	ns	—
Ever use any method	1.61	ns	1.29	1.58	ns	1.31	ns	1.60
Currently use any method	1.65	ns	ns	1.70	ns	1.55	ns	1.84
Intend to use a method	1.75	1.17	ns	1.26	ns	1.67	1.55	1.49
Discuss number of children	1.29	ns	1.29	1.44	ns	1.71	ns	ns
Want no more children	ns	ns	1.37	ns	ns	1.18	ns	ns
Provide numeric response on desired number of children	1.96	1.20	1.41	1.26	ns	1.45	ns	1.86

Note: Controls include age, number of children, urban-rural residence, region of residence, husband's occupation, electricity in the house, and ownership of a refrigerator, bicycle, or motorcycle.
 ns = Not statistically significant
 FP = Family planning

The association of the reproductive measures with having heard family planning messages on radio or television is much more limited than that with more general media exposure in 1990-91 but is much stronger in 1994-95. In the later survey, all the reproductive measures show significant associations with having heard family planning messages on the radio, while television messages indicate many effects as well. That fact may reflect an improvement in the penetration and content of the targeted media messages.

3.6 MARRIED MEN

The 1991-92 survey in Pakistan provides an opportunity to examine the effects of mass media on the contraceptive behavior and reproductive attitudes of men (men were not included in the 1994-95 survey). The men constitute a one-third sample of the husbands of the women who were interviewed. A comparison of their media exposure with married women in general reveals that they are substantially more likely than their wives to listen to the radio regularly (61 percent compared with 28 percent of their wives), to watch television regularly (43 compared to 28 percent), and to read newspapers—there is a difference in literacy levels (37 percent read newspapers compared with 12 percent of their wives). Consistent with their greater exposure to radio

and television in general, the men also are more likely to have heard family planning messages on both media than are their wives. Radio messages are reported by 31 percent of the men compared with 17 percent of their wives, and television messages by 26 percent of the men compared with 16 percent of the women.

The effects of media exposure on knowledge and attitudes toward family planning (Table 3.2) are similar for men and women. The association with the use of contraception shows a greater effect of the print media for men. The association with whether the number of children is discussed is also different in response to the print media: although the odds ratio for men is 2.66, it does not even reach a significant level for women. Such sex differences also were found in earlier work on this subject in Africa (Westoff and Bankole, 1997).

3.7 COUPLES

The analysis shown in Table 3.3 is designed to compare both the relative importance of wives' and husbands' exposure to the media and the combined effect of joint exposure of both spouses on several measures of

Table 3.2 Odds ratios of the effects of exposure to mass media on reproductive attitudes and behavior of married men, with all controls, Pakistan 1990-91

	Radio	TV	Print	FP radio messages	FP TV messages
Know a modern method	1.67	ns	1.64	3.39	ns
Approve of family planning	1.41	1.46	1.90	1.74	ns
Discuss family planning with husband	ns	1.85	ns	ns	1.44
Ever use any method	ns	1.56	1.61	ns	1.42
Currently use any method	ns	1.76	1.63	1.69	ns
Intend to use a method	1.57	2.14	ns	ns	ns
Discuss number of children	1.44	ns	2.66	ns	ns
Want no more children	1.51	ns	1.76	ns	2.14
Provide numeric response on desired number of children	ns	1.81	1.68	1.37	ns

Note: Controls include age, number of children, urban-rural residence, region of residence, education, occupation, electricity in the house, and ownership of a refrigerator, bicycle, or motorcycle.

ns = Not statistically significant

FP = Family planning

Table 3.3 Odds ratios of the effects of exposure to mass media on reproductive attitudes and behavior of couples, with all controls, Pakistan 1990-91

	Exposed to radio, TV, or print			Heard family planning messages on radio or TV		
	Wife	Husband	Couple	Wife	Husband	Couple
Know a modern method	1.79	ns	2.29	1.43	2.97	2.88
Currently use any method	1.67	ns	2.41	ns	ns	ns
Intend to use a method	ns	ns	1.99	ns	2.57	2.06
Want no more children	ns	ns	ns	1.42	1.54	1.54
Approve of family planning	1.54	2.48	2.13	1.76	1.84	2.89

Note: Controls include age and education of wife and husband, number of children, urban-rural residence, region, electricity in the home, and ownership of a refrigerator, bicycle, and motorcycle

ns = Not statistically significant

reproductive attitudes and behavior. For the mass media in general, the influence is greater when both spouses are exposed. The pattern obtains for knowledge of a method, for current use, and for intention to use. Approval of family planning shows a greater media effect for husbands than for wives, but no effects emerge for intentions to have more children. For exposure to family planning messages, the

effects for the husband seem more important than for the wife but the differences are not large except for knowledge of a method and intentions to use a method. It is notable that no significant effects of media messages on family planning are detectable in connection with the current use of contraception for wife, husband, or the couple.

4 India

4.1 HETEROGENEITY

Exposure to the mass media in India in 1992-93 was more extensive than in Pakistan two years earlier for both general exposure and family planning messages. Media exposure is of course growing rapidly in both countries and, as noted earlier, there were large increases in Pakistan between 1990-91 and 1994-95. Undoubtedly, the same is true in India in the past five years. In any event, close to half the Indian women listened regularly to the radio and a third watched television; 43 percent of the women reported having heard family planning messages on the media in the preceding month (questions on the print media were not included in the Indian survey).

India is an extraordinarily heterogeneous country with different religions, ethnic groups, languages, and levels of economic development. The diversity extends to exposure to the mass media as well as to family planning and fertility. Some summary measures are shown for the 25 states of India in Table 4.1. The proportion watching television regularly ranges from a high of 83 percent in Delhi to a low of 13 percent in Bihar. Radio listening is highest in Kerala (73 percent) and also lowest (26 percent) in Bihar. Having heard family planning messages on radio or television in the last month reaches 80 percent in Delhi and a low of 24 percent in the state of Assam. Contraceptive prevalence also varies widely across the states; the CPR (contraceptive prevalence rate) is highest (63 percent) in Kerala and lowest (13 percent) in Nagaland. The last two columns of Table 4.1 show the total wanted fertility rate (TWFR) (an estimate of what the total fertility rate [TFR] would be if only wanted births occurred) and the total fertility rate itself. For all of India, the total fertility rate was 3.39 and the total wanted fertility rate is estimated at 2.64 (the difference of 0.75 is an estimate of the unwanted fertility rate).

The relationship across the 25 states of India between exposure to the mass media and contraceptive prevalence is very strong (Figure 4.1), yielding a direct correlation of .74. The association at this aggregate level between the proportion of women who heard family planning messages on radio or television and the contraceptive prevalence rate (Figure 4.2) is also significant but not as strong (the correlation is .55).

In view of the great heterogeneity in the country, we show all the results not only for India as a whole but also for some important subdivisions of the population such as illiterate women and women in the less developed northern states. The same strategy of analysis as for Pakistan is followed for India: we examine the association of both mass media exposure in general and exposure to family planning messages with the same measures of reproductive behavior while simultaneously controlling for age, number of children, region of residence, rural-urban residence, education, religion, husband's occupation, electricity in the house, and ownership of a refrigerator, a bicycle, a motorcycle, or a car (indices of economic status). All four types of the media are included in the same analysis; for example, the odds of using contraception if one watches television regularly are estimated not only with all the controls listed but also independently of having heard such family planning messages on television or on the radio and of listening to the radio. The combined effect of radio and television was also estimated, but typically it yielded values only marginally greater than that for the higher of the two. We begin with all of India.

4.2 CONTRACEPTIVE BEHAVIOR

Acquaintance with at least one contraceptive method is almost universal among the women of India: 96 percent of married women recognize a method. Sterilization, both female and male, is the most widely known; it is followed by the pill and the intrauterine device (IUD). Because information seems so high in India, we focus on other measures. Approval of the idea of family planning (80 percent approve) is significantly associated with watching television and is particularly related to having heard messages about family planning on either radio or television (top panel of Figure 4.3). Whether the subject is discussed with the woman's husband is also significantly associated with both general and specific types of media exposure (bottom panel of Figure 4.3).

Whether contraception has ever been used or is being used currently shows a similar pattern of association with media exposure, with general television exposure exerting the greatest effect (top two panels of Figure 4.4). Media messages on family planning show the least effect. The opposite is evident with intention to use a method where television messages are the main story (bottom panel of Figure 4.4).

Table 4.1 Exposure to mass media and selected reproductive measures by state, India, 1992-93¹

State	Exposure to mass media (%)			Reproductive measures		
	Watches television at least once a week	Listens to radio at least once a week	Heard planning messages on radio or TV	Currently using a method (%)	Total wanted fertility rate	Total fertility rate
North						
Delhi	83	64	80	60	2.20	3.02
Haryana	49	43	53	50	2.81	3.99
Himachal Pradesh	48	55	45	58	2.04	2.97
Jammu region of J & K	50	65	61	49	2.21	3.13
Punjab	58	42	60	59	2.15	2.92
Rajasthan	18	28	33	32	2.78	3.63
Central						
Madhya Pradesh	27	33	35	37	3.21	3.90
Uttar Pradesh	19	30	33	20	3.82	4.82
East						
Bihar	13	26	27	23	3.18	4.00
Orissa	17	36	27	36	2.32	2.92
West Bengal	34	49	35	57	2.20	2.92
Northeast						
Arunachal Pradesh	30	41	31	24	3.84	4.25
Assam	18	34	24	43	2.52	3.53
Manipur	39	63	64	35	2.29	2.76
Meghalaya	24	38	36	21	3.39	3.73
Mizoram	26	56	51	54	2.09	2.30
Nagaland	23	43	40	13	2.95	3.26
Tripura	34	58	39	56	1.98	2.67
West						
Goa	72	70	75	48	1.60	1.90
Gujarat	40	47	48	49	2.33	2.99
Maharashtra	47	53	52	54	2.13	2.86
South						
Andha Pradesh	40	63	59	47	2.09	2.59
Karnataka	40	64	68	49	2.18	2.85
Kerala	43	73	57	63	1.82	2.00
Tamil Nadu	51	61	53	50	1.76	2.48
India	32	44	43	41	2.64	3.39

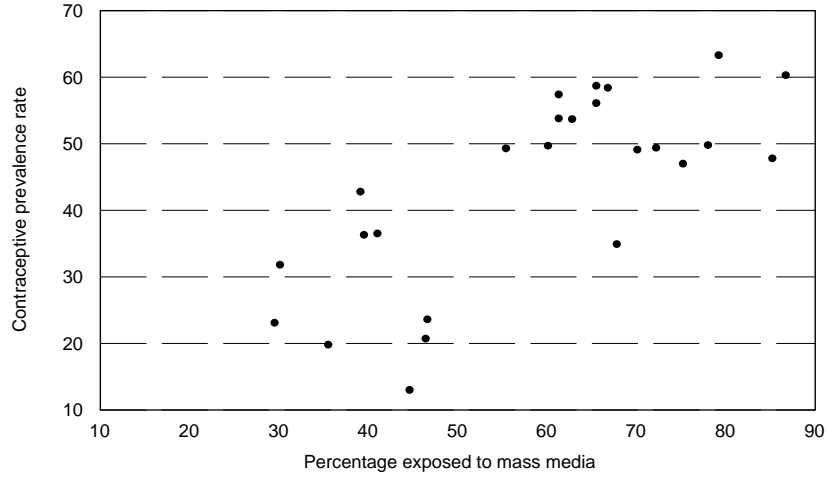
¹ Adapted from various tables in *National Family Health Survey (MCH and Family Planning), India 1992-93*. International Institute for Population Sciences, Bombay.

4.3 REPRODUCTIVE ATTITUDES

Whether the wife has discussed the number of children with her husband is significantly associated with all four types of mass media, especially with having heard family planning messages on the radio or television (Figure 4.5).

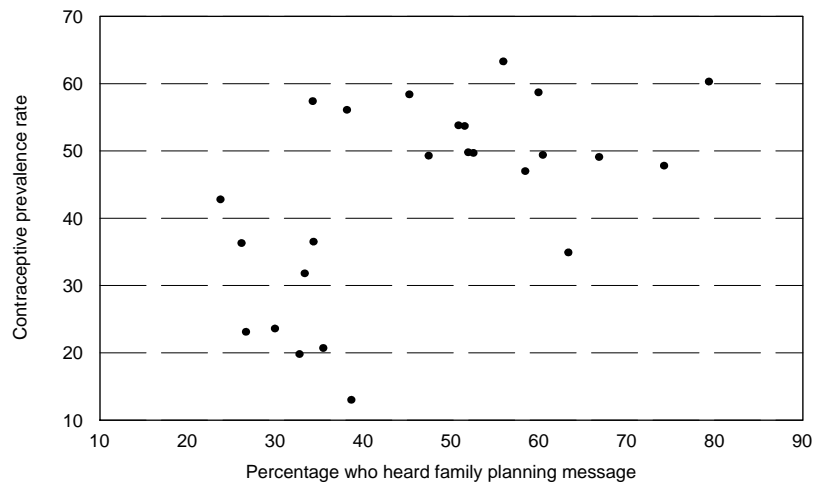
The most important measure of reproductive preference is whether the woman wants any more children. In India, 59 percent of women questioned stated that they wanted no more children or that they or their husbands had been sterilized. General exposure to television in particular is significantly associated with that intention (middle panel of Figure 4.5). A similar result is apparent with a preference for no more than two children (bottom panel of Figure 4.5).

Figure 4.1 Contraceptive prevalence by exposure to mass media, for the 25 states of India, 1992-93



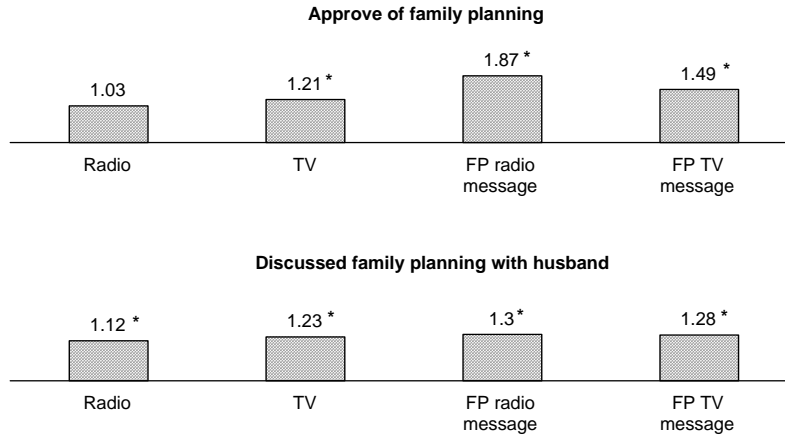
Source: India Survey 1992-93

Figure 4.2 Contraceptive prevalence by exposure to family planning messages on radio or television, for the 25 states of India, 1992-93



Source: India Survey 1992-93

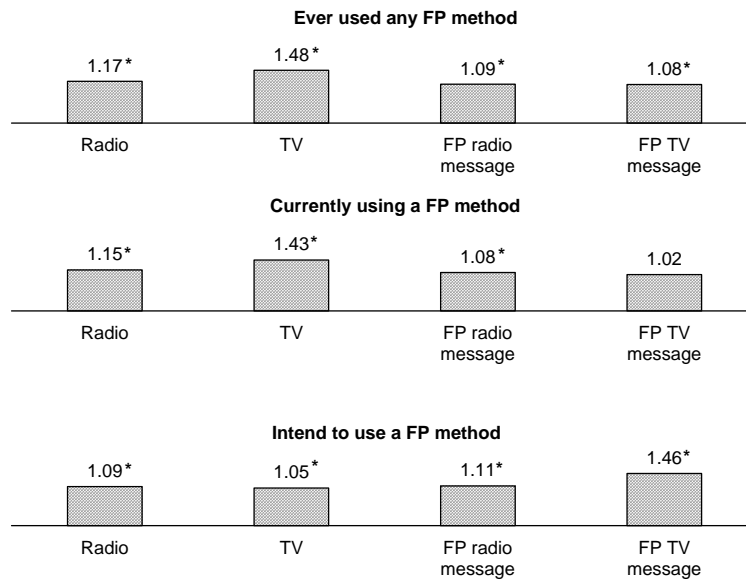
Figure 4.3 Odds ratios of the effects of exposure to mass media on approval of family planning (FP) and on whether family planning was discussed with the husband, with all controls, India 1992-93



* Statistically significant

Source: India Survey 1992-93

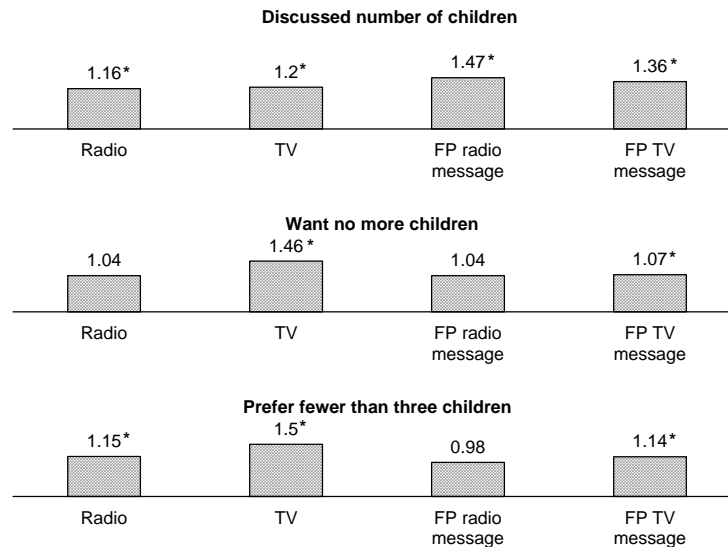
Figure 4.4 Odds ratios of the effects of exposure to mass media on ever use and current use of family planning (FP), and intention to use FP, with all controls, for currently married women, India 1992-93



* Statistically significant

Source: India Survey 1992-93

Figure 4.5 Odds ratios of the effects of exposure to mass media on reproductive preferences, with all controls, India 1992-93



* Statistically significant
FP = Family planning

Source: India Survey 1992-93

4.4 NORTHERN INDIA

Four states in the north are singled out for special attention: Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh. They all are Hindi speaking and are the least socially and economically developed states in the country. They are the four states with the highest proportions of illiteracy in India.

Listening to the radio generally shows no association with any of the contraceptive or reproductive measures in the four states (Table 4.2), whereas modest effects were apparent in India as a whole. Regular television viewing has an impact on most of the measures at a slightly lower level than for the entire country. On the other hand, radio and television messages about family planning show a significant impact on all the measures at mostly higher levels than in the country as a whole.

4.5 STATES WITH LOW CONTRACEPTIVE PREVALENCE

Although the four states have low contraceptive prevalence rates (averaging 22 percent compared with 41 percent in all of India in 1992-93), there are other states with equally low and even lower rates, such as Arunachal Pradesh, Nagaland, Manipur, Orissa, and Meghalaya. We also analyzed media effects for all those states with low contraceptive prevalence rates, including the four states that are the basis for the results in Table 4.2. The results were almost identical (Table 4.3): The media transmission of family planning messages is consistently strong but only general television exposure shows any additional impact.

4.6 ILLITERATE WOMEN

The impact of mass media on contraceptive behavior and reproductive attitudes is about the same for illiterate women as it is for all women in India. If there is any real difference, the associations with family planning messages are slightly stronger (Table 4.4) than in the general population.

Table 4.2 Odds ratios of the association between exposure to mass media and reproductive attitudes and behavior, with all controls, for women in four northern states (Bihar, Madya Pradesh, Rajasthan, and Uttar Pradesh), India, 1992-93

	Radio	TV	FP radio messages	FP TV messages
Approve of family planning	0.89	1.21	2.02	1.33
Discuss family planning with husband	ns	1.21	1.37	1.25
Ever use any method	ns	1.16	1.36	1.34
Currently use any method	ns	1.16	1.32	1.19
Intend to use a method	ns	ns	1.31	1.84
Discuss number of children	ns	ns	1.68	1.44
Want no more children	0.88	1.23	1.19	1.22
Prefer fewer than three children	ns	1.31	1.17	1.15

Note: Controls include number of children, region of residence, rural-urban residence, education, religion, husband's occupation, electricity in the house, and ownership of a refrigerator, a bicycle, a motorcycle, or a car.
 ns = Not statistically significant
 FP = Family planning

Table 4.3 Odds ratios of the association between exposure to mass media and reproductive attitudes and behavior, with all controls, for women in states with low contraceptive prevalence¹, India 1992-93

	Radio	TV	FP radio messages	FP TV messages
Approve of family planning	ns	1.21	1.98	1.34
Discussed family planning with husband	ns	1.20	1.38	1.26
Ever use any method	ns	1.20	1.31	1.31
Currently use any method	ns	1.22	1.25	1.17
Intend to use a method	ns	ns	1.33	1.75
Discuss number of children	ns	ns	1.68	1.41
Want no more children	ns	1.28	1.16	1.15
Prefer fewer than three children	1.15	1.50	ns	1.14

Note: Controls include age, number of children, region of residence, rural-urban residence, education, religion, husband's occupation, electricity in the house, and ownership of a refrigerator, a bicycle, a motorcycle, or a car.
 ns = Not statistically significant
 FP = Family planning

¹ Includes the following states with rates below 40 percent: Rajasthan, Madhya Pradesh, Uttar Pradesh, Bihar, Orissa, Arunchal Pradesh, Manipur, Meghalaya, and Nagaland.

Table 4.4 Odds ratios of the association between exposure to mass media and reproductive attitudes and behavior, with all controls, for illiterate married women, India 1992-93

	Radio	TV	FP radio messages	FP TV messages
Approve of family planning	ns	1.33	1.96	1.50
Discuss family planning with husband	1.11	1.24	1.35	1.39
Ever use any method	ns	1.20	1.31	1.31
Currently use any method	1.14	1.38	1.13	1.17
Intend to use a method	1.08	ns	1.24	1.47
Discuss number of children	1.16	1.27	1.60	1.36
Want no more children	ns	1.44	ns	1.22
Prefer fewer than three children	1.16	1.41	ns	1.14

Note: Controls include age, number of children, region of residence, rural-urban residence, education, religion, husband's occupation, electricity in the house, and ownership of a refrigerator, a bicycle, a motorcycle, or a car.

ns = Not statistically significant

FP = Family planning

5 Bangladesh

5.1 MEDIA EXPOSURE

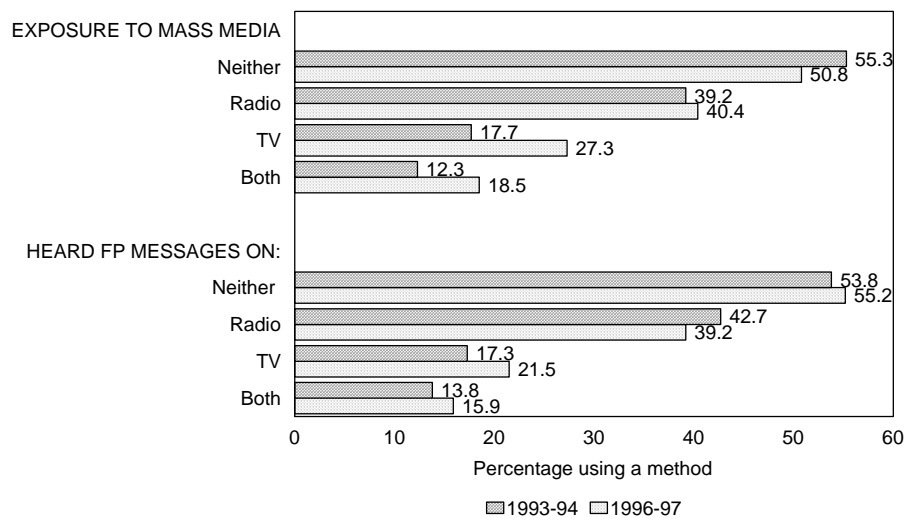
The analysis for Bangladesh is based on two DHS rounds: the 1993-94 survey and the 1996-97 survey. While the three-year interval between the surveys is a short time in which to expect change, Bangladesh is included here because the comprehensive family planning program that has been underway in that country affords the opportunity to detect possible changes in the effects of the media on reproductive behavior. It also permits verification of the findings from the earlier survey.

Radio is by far the most common type of media exposure in Bangladesh, with about 40 percent in the two surveys, respectively, reporting that they listened at least once a week (Figure 5.1). Television was watched at least weekly by only 18 percent in 1993-94 but has risen to 27 percent three years later. Around 50 percent reported no regular exposure to either medium. Since reading a newspaper or magazine at least once a week was reported by less

than 10 percent of the women (over 50 percent had no formal education at all), this type of media exposure is excluded from the analysis for women but is restored for men who claimed more weekly reading of the print media. As expected, the greatest media exposure is among the more educated women and those who live in cities and particularly in the Dhaka (Dacca) area.

Interestingly, similar proportions of women report having heard family planning messages on the radio as report listening to the radio regularly (around 40 percent in both surveys). This is an indicator of the pervasiveness of the family planning program in Bangladesh. Reports of such messages from television exposure have risen moderately over the three years from 17 to 22 percent. Despite the comprehensiveness of the national program, however, more than half reported that they had not been exposed to such media messages in the past month.

Figure 5.1 Percentage of currently married women exposed to radio or television at least once a week, and the percentage who heard a family planning (FP) message on radio or television in the past month, Bangladesh



Source: DHS surveys 1993-94, 1996-97

5.2 CONTRACEPTIVE ATTITUDES AND BEHAVIOR

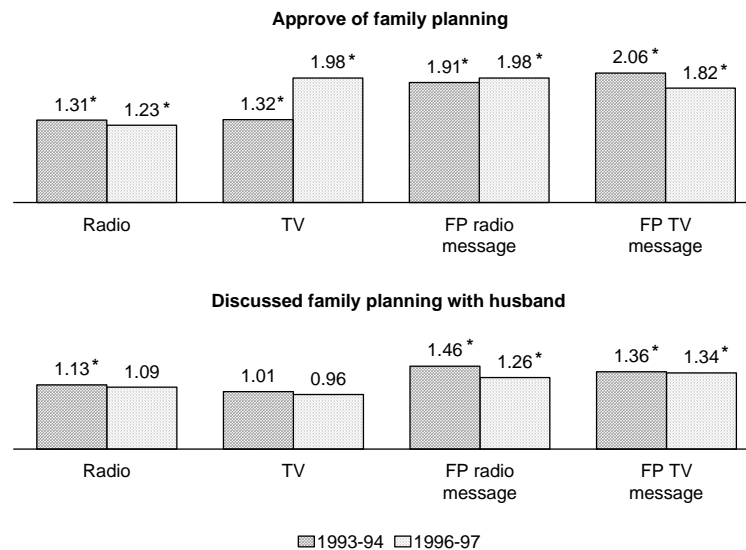
Women's approval of family planning is very high in Bangladesh and is associated with general radio and television exposure but especially with media exposure to family planning messages. Women who report this exposure are twice as likely to approve of family planning (with all the other statistical controls imposed). They are also more likely to have discussed the subject of family planning recently with their husbands (Figure 5.2). The patterns of association are very similar for the two periods, with some evidence of an increase in the effectiveness of general television exposure for family planning approval.

The use of contraception has been increasing rapidly in Bangladesh, no doubt because of the ambitious govern-

ment program. Even over the short three-year interval, the proportion of currently married women who are using a method of contraception increased by 10 percent. The effect of general radio exposure on use has virtually disappeared, although the effects of both radio and television family planning messages have persisted (top two panels of Figure 5.3).

As we have noted repeatedly, there is the problem of temporal and causal connections between the reports of media exposure and contraceptive behavior. The temporal issue is somewhat resolved in the association of media exposure and intentions to use a family planning method in the future (bottom panel of Figure 5.3). General exposure to radio and television is seen to influence intentions to use a method, although media messages on the subject do not reach significance.

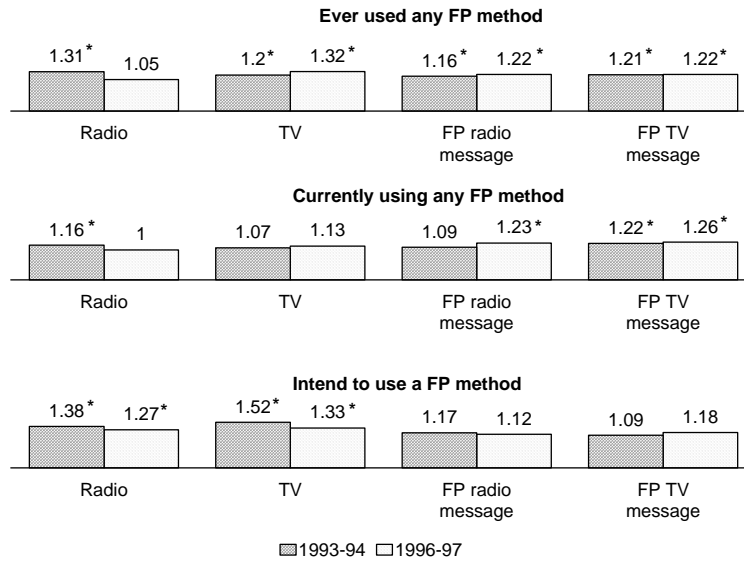
Figure 5.2 Odds ratios of the effects of exposure to mass media on approval of family planning (FP) and on whether family planning was discussed with the husband, with all controls, Bangladesh



* Statistically significant

Source: DHS surveys 1993-94, 1996-97

Figure 5.3 Odds ratios of the effects of exposure to mass media on contraceptive behavior, with all controls, for currently married women, Bangladesh



* Statistically significant
FP = Family planning

Source: DHS surveys 1993-94, 1996-97

5.3 REPRODUCTIVE ATTITUDES

Media exposure of all four types is significantly associated with discussions with the husband about the number of children to have (Figure 5.4) in the earlier survey. Three years later, only 6.6 percent reported not having discussed this subject with their spouse, so that variable has been dropped.

Whether the woman wants any more children shows little association with media exposure. A preference for smaller families as measured by wanting no more than two children (55.5 percent and increasing to 61.5 percent by 1996-97) does show some stronger association with general television exposure as well as with having heard family planning messages on the radio.

5.4 ILLITERATE WOMEN

Because the majority of married women in Bangladesh in 1993-94 had received no formal education, the effects of radio and television exposure on contraceptive attitudes and reproductive behavior are of particular interest. The associations with exposure to the media are shown for illiterate women in Table 5.1 and are shown for all married women in Table 5.2. A comparison of the two tables

indicates quite similar patterns for both populations so the appropriate generalization seems to be that the media are equally effective for illiterate women and for women in general.

Over the three-year interval between surveys, the effect of general radio exposure on reproductive measures has diminished, both for all women and for illiterate women, whereas the television effects have remained constant. There seems to have been a clear increase in the importance of family planning radio messages, especially among illiterate women.

5.5 MARRIED MEN

In Bangladesh, a sample of 3,284 men married to women in the larger sample were interviewed in the 1993-94 Demographic and Health Surveys, and 3,346 were included in the 1996-97 DHS. In Table 5.3, we show the same multivariate analyses of the associations of contraceptive attitudes and behavior and reproductive attitudes as for the women in the sample. The only difference in the procedure is that the controls for men include employment and occupational detail in addition to the standard demographic variables. Also, exposure to the print media is analyzed because more men than women read newspapers

Figure 5.4 Odds ratios of the effects of exposure to mass media on reproductive attitudes of currently married women, with all controls, Bangladesh

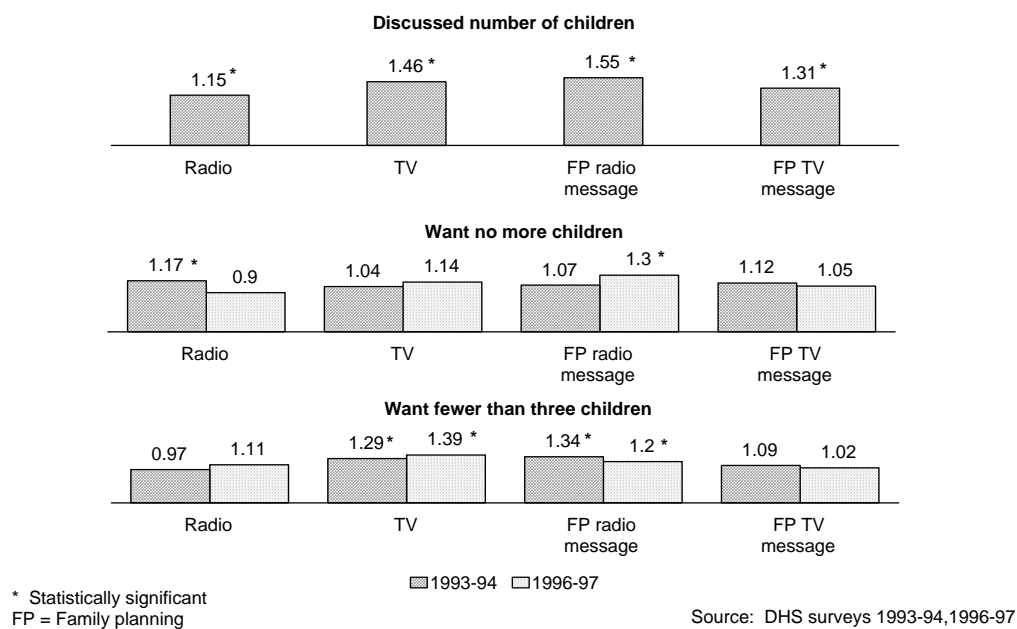


Table 5.1 Odds ratios of the association between exposure to mass media and reproductive attitudes and behavior, with all controls, for illiterate women, Bangladesh

	Radio		Television		FP radio messages		FP TV messages	
	1993-94	1996-97	1993-94	1996-97	1993-94	1996-97	1993-94	1996-97
Approve of family planning	1.44	ns	ns	2.01	1.72	2.10	2.74	ns
Discuss family planning with husband	1.17	ns	ns	ns	1.42	1.47	1.47	ns
Ever use any method	1.30	ns	ns	ns	ns	1.31	1.52	ns
Currently use any method	1.23	ns	ns	ns	ns	1.29	1.32	1.28
Intend to use a method	1.19	1.28	1.43	1.62	1.22	1.27	ns	ns
Discuss number of children	1.18	1.56	1.37	ns	1.43	ns	1.60	ns
Want no more children	ns	0.80	ns	ns	ns	1.44	ns	ns
Want fewer than three children	0.85	ns	1.39	1.41	1.35	ns	ns	ns

Note: Controls include age, number of children, education, region, rural-urban residence, husband's occupation, electricity in the house, and ownership of a bicycle.
 ns = Not statistically significant
 FP = Family planning

Table 5.2 Odds ratios of the association between exposure to mass media and reproductive attitudes and behavior, with all controls, for all married women, Bangladesh

	Radio		Television		FP radio messages		FP TV messages	
	1993-94	1996-97	1993-94	1996-97	1993-94	1996-97	1993-94	1996-97
Approve of family planning	1.31	1.23	1.32	1.98	1.91	1.98	2.06	1.82
Discuss family planning with husband	1.13	ns	ns	ns	1.46	1.26	1.36	1.34
Ever use any method	1.31	ns	1.20	1.33	1.16	1.22	1.21	ns
Currently use any method	1.16	ns	ns	ns	ns	1.23	1.22	1.26
Intend to use a method	1.38	1.26	1.52	1.33	ns	ns	ns	ns
Discuss number of children	1.15	1.50	1.46	ns	1.55	ns	1.31	ns
Want no more children	1.17	ns	ns	ns	ns	1.30	ns	ns
Want fewer than three children	ns	ns	1.29	1.39	1.34	1.20	ns	ns

Note: Controls include age, number of children, education, region, rural-urban residence, husband's occupation, electricity in the house, and ownership of a bicycle.

ns = Not statistically significant

FP = Family planning

Table 5.3 Odds ratios of the effects of exposure to mass media on reproductive attitudes and behavior for married men, with all controls, Bangladesh, 1993-94 and 1996-97

	Radio		Television		Print		FP radio messages		FP TV messages	
	1993-94	1996-97	1993-94	1996-97	1993-94	1996-97	1993-94	1996-97	1993-94	1996-97
Approve of family planning (FP)	1.43	1.51	ns	ns	ns	ns	2.07	ns	ns	2.34
Discuss family planning with wife	1.24	ns	1.36	ns	1.51	ns	1.75	1.87	ns	1.68
Ever use any method	ns	1.34	1.30	1.31	1.43	1.51	1.51	ns	ns	ns
Currently use any method	ns	ns	ns	ns	ns	ns	ns	ns	ns	1.36
Intend to use a method	1.49	1.91	ns	ns	ns	ns	ns	ns	1.98	ns
Want no more children	ns	ns	ns	ns	1.44	ns	1.35	ns	ns	1.58
Want fewer than three children	ns	ns	ns	ns	1.38	ns	ns	ns	1.27	1.34

Note: Controls include age, number of children, education, region, urban-rural residence, region, employment, occupation, electricity, bicycle ownership.

ns = Not statistically significant

and magazines in Bangladesh. The covariates of media exposure are the same as for other populations—younger and more educated men and city residents tend to be more exposed to all the media types as well as men in white-collar occupations and those with electricity in the home.

In general, the results are not as pervasive as for women. Family planning messages on the radio in 1993-94 and on television in 1996-97 have the most impact on the fertility and family planning measures.

5.6 COUPLES

As in the Pakistan Demographic and Health Surveys, the sample of men in the Bangladesh DHS permits analysis of the effects of mass media for married couples. The results (Table 5.4) compare the effects on wives vs. husbands and the impact for couples (where both wife and husband are exposed) of exposure both to the mass media in general and to media messages that promote family planning.

General media exposure is associated with intentions to use contraception, whereas exposure to family planning messages is significantly associated with most of the other reproductive behavior and attitudinal measures. There appear to be no convincing incremental effects of exposure by both spouses.

Table 5.4 Odds ratios of the effects of exposure to mass media on reproductive attitudes and behavior of couples, with all controls, Bangladesh, 1993-94 and 1996-97

	Exposed to radio or TV			Heard family planning messages on radio or TV		
	Wife	Husband	Couple	Wife	Husband	Couple
Currently use any method						
1993-94	1.22	ns	1.23	ns	1.33	1.32
1996-97	ns	ns	1.36	1.39	1.28	1.33
Intend to use a method						
1993-94	1.51	1.38	1.76	ns	1.40	ns
1996-97	2.40	1.62	2.16	ns	ns	ns
Want no more children						
1993-94	ns	ns	ns	ns	1.28	ns
1996-97	1.28	ns	1.51	1.46	ns	1.38
Approve family planning						
1993-94	ns	1.37	1.45	1.57	1.68	1.84
1996-97	1.51	ns	2.13	2.78	ns	2.94
Discuss family planning						
1993-94	1.22	ns	1.44	1.43	1.42	1.55
1996-97	ns	ns	ns	1.57	2.94	2.06
Discuss number of children						
1993-94	ns	ns	1.47	1.47	1.53	1.55

Note: Controls include age and education of wife and husband, number of children, urban-rural residence, region, electricity in the home, and ownership of a refrigerator and bicycle.
ns = Not statistically significant

6 Conclusions

What has been learned from this research about the influence of exposure to the mass media on reproductive behavior? Five recent national samples of married women in Pakistan, India, and Bangladesh have been studied along with three samples of men. Altogether, eight measures of reproductive behavior have been examined in relation to general exposure to radio and television as well as to specific media messages on family planning. In Pakistan, exposure to magazines and newspapers has also been studied.

Because both media exposure and family planning behavior are related to urban residence, education, age, number of children, and other socioeconomic variables, the statistical analysis controls for such covariates. The question is whether different types of media exposure and reproductive behavior are significantly related over and above their joint connections with other types of media exposure and with the socioeconomic, residential, and life-cycle co-

variates. The following patterns of association are evident for the five samples of married women (see Table 6.1).

6.1 GENERAL RESULTS

Approval of the idea of family planning and ever use of contraception are consistently related to the mass media measures. In almost all of the multivariate tests, the two family planning measures retain significant associations with media exposure.

Whether the subject of family planning has been discussed with the husband shows significant associations in 11 of the 16 tests.

Whether contraception is being used currently or, if not, whether the women intend to use a method in the future both show significant effects in 11 of the 20 tests.

Table 6.1 Summary of multivariate results for the three countries (Pakistan, India, and Bangladesh): number of significant effects of media exposure variables on measures of family planning, with all controls

Family planning measure	Radio	TV	FP-radio	FP-TV	Total (of 20) ¹
Approve of family planning (FP)	3	5	5	5	18
Discuss family planning with husband	2	2	3	4	11
Ever use contraception	3	5	5	4	17
Currently use a method	2	3	3	3	11
Intend to use a method	4	3	2	2	11
Discuss number of children with husband	4	3	3	2	12
Want no more children	1	2	2	1	6
Want fewer than three children ²	3	5	3	2	13
Total significant effects	22	28	26	23	99
Total tests	39	39	39	39	156

¹In all, 20 tests were performed for each measure (the product of 5 surveys and 4 media variables) except for the measure whether family planning was discussed with the husband, for which a total of 16 tests are available.

²For Pakistan, the measure was whether a numeric response was given to the question of number of children desired.

Two measures of reproductive attitudes show fairly consistent associations with media exposure —whether the woman has discussed with her husband the number of children to have (12 of 20 tests prove significant) and whether the desired number is less than three children (in Pakistan, whether a numeric response was given to the question) show 13 significant effects of the 20 tests performed.

The least impressive result is for the measure of whether the woman wants more children, which shows 6 of 20 significant effects.

In sum, 99 of the 156 multivariate tests showed statistically significant effects of the media on the different measures of reproductive behavior. General exposure to radio and television, especially the latter, appear about equally influential as targeted family planning messages through the media.

6.2 COUNTRY RESULTS

In Pakistan, 34 of the 59 multivariate tests in both surveys showed significant media effects. The results from the more recent survey are more striking, though the effects of general radio exposure virtually disappeared while that for general television remained strong. A dramatic increase in the effects of both radio and television family planning messages is evident. In the 1990-91 survey, only 4 of 16 media messages showed significant effects although in the 1994-95 survey the number increased to 12 of 14. Given the fact that the Pakistani family planning program has not been successful (some would argue that it has never been tried),

a stronger case can be made that the recent increases in media exposure and in contraceptive prevalence might be causally connected.

In India, the media show pervasive associations with reproductive behavior: 26 of the 32 tests survived the imposition of all the control variables and show significant effects. Some part of this may simply reflect the very large sample in India that can detect more marginal effects beyond chance expectation. Quite a few odds ratios fall below 1.20 that are statistically significant in the India survey. Another analysis of the same data from India (Ramesh et al., 1996) also concluded that “regular exposure to electronic media has a large effect on contraceptive use.”

The Bangladesh results show a total of 39 of 64 significant results for the two surveys, somewhat more (22 of 32) for the 1992-93 than for the 1996-97 survey (17 of 32). Of course, the three-year interval may be too short to reveal changes. The association with general radio exposure seems to have declined, as it did in Pakistan, although the impact of media messages on family planning shows little change.

Perhaps it has been stated sufficiently, but the methodological caveat is important. What has been demonstrated here is a robust statistical association between media exposure and various measures of reproductive behavior, an association that persists in the presence of socioeconomic, residential, and life-cycle covariates. The evidence is highly suggestive but the causal connections cannot be unambiguously demonstrated.

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Appendix A

Summary of DHS-I, DHS-II, and DHS-III Surveys, 1985-1999

Region and Country	Date of Fieldwork	Implementing Organization	Respondents	Sample Size	Male/Husband Survey	Supplemental Studies, Modules, and Additional Questions
SUB-SAHARAN AFRICA						
DHS-I						
Botswana	Aug-Dec 1988	Central Statistics Office	AW 15-49	4,368		AIDS, PC, adolescent fertility
Burundi	Apr-Jul 1987	Département de la Population, Ministère de l'Intérieur	AW 15-49	3,970	542 Husbands	CA, SAI, adult mortality
Ghana	Feb-May 1988	Ghana Statistical Service	AW 15-49	4,488	943 Husbands	CA, SM, WE
Kenya	Dec-May 1988/89	National Council for Population and Development	AW 15-49	7,150	1,133 Husbands	
Liberia	Feb-Jul 1986	Bureau of Statistics, Ministry of Planning and Economic Affairs	AW 15-49	5,239		TBH, employment status
Mali	Mar-Aug 1987	Institut du Sahel, USED/CERPOD	AW 15-49	3,200	970 Men 20-55	CA, VC, childhood physical handicaps
Ondo State, Nigeria	Sep-Jan 1986/87	Ministry of Health, Ondo State	AW 15-49	4,213		CA, TBH
Senegal	Apr-Jul 1986	Direction de la Statistique, Ministère de l'Economie et des Finances	AW 15-49	4,415		CA, CD
Sudan (Northern)	Nov-May 1989/90	Department of Statistics, Ministry of Economic and National Planning	EMW 15-49	5,860		FC, M, MM
Togo	Jun-Nov 1988	Unité de Recherche Démographique, Université du Bénin	AW 15-49	3,360		CA, SAI, marriage history
Uganda	Sep-Feb 1988/89	Ministry of Health	AW 15-49	4,730		CA, SAI
Zimbabwe	Sep-Jan 1988/89	Central Statistical Office	AW 15-49	4,201		AIDS, CA, PC, SAI, WE
DHS-II						
Burkina Faso	Dec-Mar 1992/93	Institut National de la Statistique et de la Démographie	AW 15-49	6,354	1,845 Men 18+	AIDS, CA, MA, SAI
Cameroon	Apr-Sep 1991	Direction Nationale du Deuxième Recensement Général de la Population et de l'Habitat	AW 15-49	3,871	814 Husbands	CA, CD, SAI
Madagascar	May-Nov 1992	Centre National de Recherches sur l'Environnement	AW 15-49	6,260		CA, MM, SAI
Malawi	Sep-Nov 1992	National Statistical Office	AW 15-49	4,850	1,151 Men 20-54	AIDS, CA, MA, MM, SAI
Namibia	Jul-Nov 1992	Ministry of Health and Social Services, Central Statistical Office	AW 15-49	5,421		CA, CD, MA, MM
Niger	Mar-Jun 1992	Direction de la Statistique et des Comptes Nationaux	AW 15-49	6,503	1,570 Husbands	CA, MA, MM, SAI
Nigeria	Apr-Oct 1990	Federal Office of Statistics	AW 15-49	8,781		CA, SAI
Rwanda	Jun-Oct 1992	Office National de la Population	AW 15-49	6,551	598 Husbands	CA
Senegal	Nov-Aug 1992/93	Direction de la Prévision et de la Statistique	AW 15-49	6,310	1,436 Men 20+	AIDS, CA, MA, MM, SAI
Tanzania	Oct-Mar 1991/92	Bureau of Statistics, Planning Commission	AW 15-49	9,238	2,114 Men 15-60	AIDS, CA, MA, SAI
Zambia	Jan-May 1992	University of Zambia	AW 15-49	7,060		AIDS, CA, MA

DHS-III

Benin	Jun-Aug 1996	Institut National de la Statistique	AW 15-49	5,491	1,535 Men 20-64	AIDS, CA, MA, MM, SAI
Burkina Faso	Nov-Mar 1998/99	Institut National de la Statistique Ministère de l'Économie et des Finances	AW 15-49	6,445	2,641 Men 15-59	AIDS, CA, FC, MA, MM
Cameroon	Feb-Jun 1998	Bureau Central du Recensement et Etudes de Population	AW 15-49	5,501	2,562 Men 15-59	AIDS, CA, CD, MA, MM
Central African Republic	Sep-Mar 1994/95	Direction des Statistiques Démographiques et Sociales	AW 15-49	5,884	1,729 Men 15-59	AIDS, CA, CD, FC, MA, MM, SAI
Chad	Dec-Jul 1996/97	Bureau Central du Recensement	AW 15-49	7,454	2,320 Men 15-59	AIDS, CA, CD, MA, MM, SAI
Comoros	Mar-May 1996	Centre National de Documentation et de la Recherche Scientifique	AW 15-49	3,050	795 Men 15-64	CA, MA
Côte d'Ivoire	Jun-Nov 1994	Institut National de la Statistique	AW 15-49	8,099	2,552 Men 15-59	CA, FC, MA, SAI
Côte d'Ivoire	Sep-Mar 1998/99	Institut National de la Statistique	AW 15-49	3,040	886 Men 15-59	AIDS, CA, FC, MA
Eritrea	Sep-Jan 1995/96	National Statistics Office	AW 15-49	5,054	1,114 Men 15-59	AIDS, CA, FC, MA, MM, SAI
Ghana	Sep-Dec 1993	Ghana Statistical Service	AW 15-49	4,562	1,302 Men 15-59	CA, MA
Kenya	Feb-Aug 1993	National Council for Population and Development	AW 15-49	7,540	2,336 Men 15-54	AIDS, CA, MA, SAI
Kenya	Feb-Jul 1998	National Council for Population and Development	AW 15-49	7,881	3,407 Men 15-54	AIDS, CA, FC, MA, MM
Madagascar	Sep-Dec 1997	Institut National de la Statistique, Direction de la Démographie et des Statistiques Sociales	AW 15-49	7,060		AIDS, AT, CA, MA, MM
Malawi (KAP) ^a	Jun-Oct 1996	National Statistical Office	AW 15-49	2,683	2,658 Men 15-54	AIDS
Mali	Nov-Apr 1995/96	CPS/MSSPA et DNSI	AW 15-49	9,704	2,474 Men 15-59	AIDS, CA, FC, MA, MM, SAI
Mozambique	Mar-Jul 1997	Instituto Nacional de Estatística Ministério de Saúde	AW 15-49	8,779	2,335 Men 15-64	CA, MA, MM, SAI
Niger	Mar-Jul 1998	Care International	AW 15-49	7,577	3,512 Men 15-59	AIDS, CA, FC, MA, SAI
Senegal (Interim)	Jan-Apr 1997	Division de Statistiques Démographiques, Direction de la Prévision et de la Statistique	AW 15-49	8,593	4,306 Men 20+	AIDS
South Africa	Nov-Mar 1997/98	Dept. of Health Medical Research Council	AW 15-19	11,735	13,827 Adult 15+	AIDS, DV, MA, MM
Tanzania (KAP) ^a	Jul-Sep 1994	Bureau of Statistics, Planning Commission	AW 15-49	4,225	2,097 Men 15-59	AIDS, PC
Tanzania (In-depth)	Jun-Oct 1995	Bureau of Statistics, Planning Commission	AW 15-49	2,130		Adult and childhood mortality estimation
Tanzania	Jul-Nov 1996	Bureau of Statistics, Planning Commission	AW 15-49	8,120	2,256 Men 15-59	AIDS, CA, FC, MA, MM
Togo	Feb-May 1998	Direction de la Statistique	AW 15-49	8,569	3,819 Men 15-59	AIDS, CA, MA, MM
Uganda	Mar-Aug 1995	Statistics Department, Ministry of Finance and Economic Planning	AW 15-49	7,070	1,996 Men 15-59	AIDS, CA, MA, MM, SAI
Uganda (In-depth)	Oct-Jan 1995/96	Institute of Statistics and Applied Economics, Makerere University	AW 20-44	1,750	1,356 Partners	Negotiating reproductive outcomes
Zambia	Jul-Jan 1996/97	Central Statistics Office	AW 15-49	8,021	1,849 Men 15-59	AIDS, CA, MA, MM

Zimbabwe	Jul-Nov 1994	Central Statistical Office	AW 15-49	6,128	2,141 Men 15-54	AIDS, CA, MA, MM, PC, SAI
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NEAR EAST/NORTH AFRICA

DHS-I

Egypt	Oct-Jan 1988/89	National Population Council	EMW 15-49	8,911		CA, CD, MM, PC, SAI, WE, WS
Morocco	May-Jul 1987	Ministère de la Santé Publique	EMW 15-49	5,982		CA, CD, S
Tunisia	Jun-Oct 1988	Office National de la Famille et de la Population	EMW 15-49	4,184		CA, S, SAI

DHS-II

Egypt	Nov-Dec 1992	National Population Council	EMW 15-49	9,864	2,466 Husbands	CA, MA, PC, SM
Jordan	Oct-Dec 1990	Department of Statistics, Ministry of Health	EMW 15-49	6,461		CA, SAI
Morocco	Jan-Apr 1992	Ministère de la Santé Publique	AW 15-49	9,256	1,336 Men 20-70	CA, MA, MM, SAI
Yemen	Nov-Jan 1991/92	Central Statistical Organization	EMW 15-49	5,687		CA, CD, FC, SAI

DHS-III

Egypt	Nov-Jan 1995/96	National Population Council	EMW 15-49	14,779		CA, FC, MA, WS
Egypt (In-depth)	Oct-Mar 1999/97	National Population Council	EMW 15-49	2,579		Reasons for nonuse of family planning
Jordan	Jun-Oct 1997	Department of Statistics	EMW 15-49	5,548		AIDS, CA, MA, MM
Morocco (Panel)	Apr-May 1995	Ministère de la Santé Publique	AW 15-49	4,753		
Yemen	Oct-Dec 1997	Central Statistical Organization	EMW 15-49	10,414		CA, CD, FC, MA, MM

ASIA
DHS-I

Indonesia	Sep-Dec 1987	Central Bureau of Statistics/ National Family Planning Coordinating Board	EMW 15-49	11,884		PC, SM
Nepal (In-depth)	Feb-Apr 1987	New Era	CMW 15-49	1,623		KAP-gap survey
Sri Lanka	Jan-Mar 1987	Department of Census and Statistics, Ministry of Plan Implementation	EMW 15-49	5,865		CA, NFP
Thailand	Mar-Jun 1987	Institute of Population Studies Chulalongkorn University	EMW 15-49	6,775		CA, S, SAI

DHS-II

Indonesia	May-Jul 1991	Central Bureau of Statistics NFPCB/MOH	EMW 15-49	22,909		PC, SM
Pakistan	Dec-May 1990/91	National Institute of Population Studies	EMW 15-49	6,611	1,354 Husbands	CA

DHS-III

Bangladesh	Nov-Mar 1993/94	Mitra & Associates/NIPORT	EMW 10-49	9,640	3,284 Husbands	PC, SAI, SM
Bangladesh	Nov-Mar 1996/97	Mitra & Associates/NIPORT	EMW 10-49	9,127	3,346 EMM	CA, MA, SM, SAI
Indonesia	Jul-Nov 1994	Central Bureau of Statistics/ NFPCB/MOH	EMW 15-49	28,168		MM, PC, SAI, SM
Indonesia	Sep-Dec 1997	Central Bureau of Statistics/ NFPCB/MOH	EMW 15-49	28,810		SAI
Kazakhstan	May-Aug 1995	Institute of Nutrition, National Academy of Sciences	AW 15-49	3,771		AT, CA, MA
Kyrgyz Republic	Aug-Nov 1997	Institute of Obstetrics and Pediatrics	AW 15-49	3,848		AT, CA, MA

Nepal	Jan-Jun 1996	Ministry of Health/New ERA	EMW 15-49	8,429		CA, MA, MM
Philippines	Apr-Jun 1993	National Statistics Office	AW 15-49	15,029		MM, SAI
Philippines	Feb-Apr 1998	National Statistics Office	AW 15-49	13,983		MM
Turkey	Aug-Oct 1993	General Directorate of MCH/FP Ministry of Health	EMW <50	6,519		CA, MA
Uzbekistan	Jun-Oct 1996	Research Institute of Obstetrics and Gynecology	AW 15-49	4,415		AT, CA, MA
Vietnam	Aug-Oct 1997	General Statistical Office	EMW 15-19	5,664		SAI

LATIN AMERICA/CARIBBEAN

DHS-I

Bolivia	Feb-Jul 1989	Instituto Nacional de Estadística	AW 15-49	7,923		CA, CD, MM, PC, S, WE
Bolivia (In-depth)	Feb-Jul 1989	Instituto Nacional de Estadística	AW 15-49	7,923		Health
Brazil	May-Aug 1986	Sociedade Civil Bem-Estar Familiar no Brasil	AW 15-44	5,892		CA, S, SM, abortion, young adult use of contraception
Colombia	Oct-Dec 1986	Corporación Centro Regional de Población, Ministerio de Salud	AW 15-49	5,329		CA, PC, S, SAI, SM
Dominican Republic	Sep-Dec 1986	Consejo Nacional de Población y Familia	AW 15-49	7,649		CA, NFP, S, SAI, family planning communication
Dominican Republic (Experimental)	Sep-Dec 1986	Consejo Nacional de Población y Familia	AW 15-49	3,885		S, SAI
Ecuador	Jan-Mar 1987	Centro de Estudios de Población y Paternidad Responsable	AW 15-49	4,713		CD, SAI, employment
El Salvador	May-Jun 1985	Asociación Demográfica Salvadoreña	AW 15-49	5,207		CA, S, TBH
Guatemala	Oct-Dec 1987	Instituto de Nutrición de Centro América y Panamá	AW 15-44	5,160		CA, S, SAI
Mexico	Feb-May 1987	Dirección General de Planificación Familiar, Secretaría de Salud	AW 15-49	9,310		NFP, S, employment
Peru	Sep-Dec 1986	Instituto Nacional de Estadística	AW 15-49	4,999		NFP, employment,
Peru (Experimental)	Sep-Dec 1986	Instituto Nacional de Estadística	AW 15-49	2,534		
Trinidad and Tobago	May-Aug 1987	Family Planning Association of Trinidad and Tobago	AW 15-49	3,806		CA, NFP, breastfeeding

DHS-II

Brazil (NE)	Sep-Dec 1991	Sociedade Civil Bem-Estar Familiar no Brasil	AW 15-49	6,222	1,266 Husbands	AIDS, PC
Colombia	May-Aug 1990	PROFAMILIA	AW 15-49	8,644		AIDS
Dominican Republic	Jul-Nov 1991	Instituto de Estudios de Población y Desarrollo (PROFAMILIA), Oficina Nacional de Planificación	AW 15-49	7,320		CA, MA, S, SAI
Paraguay	May-Aug 1990	Centro Paraguayo de Estudios de Población	AW 15-49	5,827		CA, SAI
Peru	Oct-Mar 1991/92	Instituto Nacional de Estadística e Informática	AW 15-49	15,882		CA, MA, MM, SAI

DHS-III

Bolivia	Nov-May 1993/94	Instituto Nacional de Estadística	AW 15-49	8,603 ^b		AIDS, CA, CD, MA, MM, S, SAI
Bolivia	Jul-Sep 1997	Instituto Nacional de Estadística	AW 15-49	11,187	3,780 Men 15-64	CA, MA
Brazil	Mar-Jun 1996	Sociedade Civil Bem-Estar Familiar no Brasil	AW 15-49	12,612	2,949 Men 15-59	AIDS, CA, MA, MM, PC, S
Colombia	Mar-Jun 1995	PROFAMILIA	AW 15-49	11,140		AIDS, CA, DV, MA, PC
Dominican Republic	Aug-Dec 1996	CESDEM/PROFAMILIA	AW 15-49	8,422	2,279 Men 15-64	AIDS, CA, MA, MM, SAI
Guatemala	Jun-Dec 1995	Instituto Nacional de Estadística	AW 15-49	12,403		AIDS, CA, MA, MM, S
Guatemala (In-depth1)	Mar-Jun 1997	Instituto Nacional de Estadística	Households	3,200		Health expenditures
Guatemala (In-depth2)	Feb-Jun 1997	Instituto de Nutrición de Centro América y Panamá	Facilities	375		Health providers
Haiti	Jul-Jan 1994/95	Institut Haitien de l'Enfance	AW 15-49	5,356	1,610 Men 15-59	AIDS, CA, CD, MA, SAI
Nicaragua	Nov-Jan 1997/98	Instituto Nacional de Estadísticas y Censos	AW 15-49	13,634	2,912 Men 15-59	AIDS, CA, DV, MA
Peru	Aug-Nov 1996	Instituto Nacional de Estadística e Informática	AW 15-49	28,951	2,487 Men 15-59	AIDS, AT, CA, MA, MM

^a No health or birth history section in questionnaire.

^b Household questionnaire was administered in 26,144 households.

AIDS	acquired immune deficiency syndrome	EMW	ever-married women	S	sterilization
AT	anemia testing	FC	female circumcision	SAI	service availability information
AW	all women	M	migration	SM	social marketing
CA	child anthropometry	MA	maternal anthropometry	TBH	truncated birth history
CD	causes of death (verbal reports of symptoms)	MM	maternal mortality	VC	value of children
CMW	currently married women	NFP	natural family planning	WE	women's employment
DV	domestic violence	PC	pill compliance	WS	women's status

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