

The Impact of Multimedia Family Planning Promotion On the Contraceptive Behavior of Women in Tanzania

By Miriam N. Jato, Calista Simbakalia, Joan M. Tarasevich, David N. Awasum, Clement N.B. Kihinga and Edith Ngirwamungu

Context: Family planning communications campaigns have been shown to increase contraceptive use, but it remains unclear whether exposure to messages about contraception through multiple media sources has a greater impact than exposure through one medium.

Methods: Data from a nationally representative sample of 4,225 women who participated in the 1994 Tanzania Knowledge, Attitudes and Practice Survey and in the 1991–1992 Tanzania Demographic and Health Survey were used to assess the impact of mass media family planning campaigns on contraceptive behavior. A bivariate analysis was conducted to study the association between social and demographic characteristics, family planning communications campaigns and contraceptive behavior; multiple regression analysis was used to examine the relationship between specific media campaigns and contraceptive use.

Results: The more types of media that women are exposed to, the more likely they are to practice contraception. Women who recalled six media sources of family planning messages were 11 times as likely as women who recalled no media sources to be using modern contraceptives. Even women who recalled only one media source with a family planning message were twice as likely as women who recalled no media source to be using a modern method. Women who recalled family planning messages in the media were also more likely to have discussed family planning with their spouse and to have visited a health facility than were women who could not remember any such intervention. After introduction of controls for other variables, women who recalled radio messages about family planning were 1.7 times as likely as women who reported no exposure through radio programs to have discussed family planning with their spouse and were 1.9 times as likely to have been currently using family planning.

Conclusions: Multiple media sources of information on contraception reinforce one another and extend the reach of a family planning campaign. Complementary messages may help to create an environment where the practice of contraception is perceived as a social norm. Varied media should continue to be used to promote family planning and other reproductive health issues.

International Family Planning Perspectives, 1999, 25(2):60–67

Recent research based on nationally representative surveys confirms a strong association between exposure to family planning messages in the mass media and contraceptive use, even after the effects of social and demographic variables are controlled for. For example, an analysis of the 1989 Kenya Demographic and Health Survey found that contraceptive prevalence was nearly 50% among women who recalled hearing or seeing family planning messages in three media (radio, print and television), compared with 14% among those who did not recall any family planning messages in the media. This significant relationship persisted even after differences in age, residence and socioeconomic status were taken into account.¹

Studies have documented increased contraceptive use and other behavioral changes following specific communications interventions using one or more media channels.² The question of interest to program planners is: If most potential clients are reached by a media channel, is there an added benefit when family planning messages are disseminated through additional media channels, or are additional channels redundant?

Studying the effect of exposure to a varying number of media sources is an application of the epidemiologic concept of dosage response. Our assumption here is that women who recall messages in several media are exposed to a higher “dose” of family planning information

than those exposed to only a few or no media sources. Available data do not permit measurement of the timing of exposure to different media or the intensity of media exposure. Therefore, the number of media channels with family planning information is used as a proxy for intensity of exposure.

In this article, we seek to determine whether women’s recent exposure to family planning messages in the media, as measured by their recall of these messages, has any effect on their current contraceptive use, spousal approval of family planning, discussions with their spouse about family planning or visits to a family plan-

During the preparation of this article, Miriam N. Jato was with the Center for Communication Programs, Johns Hopkins University, Baltimore, MD, USA. She has since become regional advisor in gender, population and development with the United Nations Population Fund, Addis Ababa, Ethiopia. Joan M. Tarasevich is program officer and David N. Awasum is senior program officer at the Center for Communication Programs, Johns Hopkins University. Calista Simbakalia is program manager, Clement N.B. Kihinga is research officer and Edith Ngirwamungu is information, education and communication coordinator in the Reproductive and Child Health Unit, Ministry of Health, Dar es Salaam, Tanzania. The authors would like to thank the staffs of the Bureau of Statistics of Tanzania and of Macro International, Inc., for conducting the survey and for making the data available. We would like to acknowledge Robert Foreman for preparing and cleaning the data and for providing feedback on the analyses and on statistical interpretations of the results. Special thanks are owed to Phyllis Tilson Piotrow, Jose G. Rimon II, Gary Lewis, Robert J. Riccio and Doug Storey for their valuable comments on drafts of this article. We are particularly grateful to Cynthia Green, who edited the paper. The authors are thankful to the Tanzanian Ministry of Health, especially the staff of the Family Planning Communication and the Family Planning Programme offices, for designing and implementing the project. We are especially grateful to staff of the U.S. Agency for International Development (USAID) Mission in Tanzania for their guidance and their financial and technical support. The paper on which this article is based was presented at the Second International Conference on Entertainment-Education for Social Change, Athens, OH, USA, May 7–10, 1997. The project and study described in the article were conducted by the Johns Hopkins University School of Public Health, Population Communication Services project under USAID Cooperative Agreement No. DPE-3052-A-00-0014.

ning service site. We also assess the effects of increased numbers of media sources on contraceptive behavior. Finally, the effects of five major media channels and those of two specific program interventions are examined to determine their relationship to contraceptive behavior.

Background

Tanzania, the largest country in East Africa in terms of land mass, has 29.1 million people and an annual population growth rate of 3%. Four in five Tanzanians live in rural areas, and three in five (59%) are literate.³

The government of Tanzania began to integrate family planning into maternal and child health care services in 1988.⁴ It also worked to strengthen family planning services by training service providers, improving logistics systems and implementing a national communications campaign. In 1992, the government adopted a national population policy calling for wider dissemination of family planning information.⁵ A private-sector condom marketing program began in 1992.⁶

These initiatives appear to have had a major impact on contraceptive use. In less than three years, use of modern contraceptive methods nearly doubled. By 1994, contraceptive prevalence among women aged 15–49 was 11.3%, having risen from a level of 5.9% in 1992–1993. Women are also having fewer children: The total fertility rate dropped from 6.3 lifetime births per woman in 1991–1992 to 5.8 in 1994.⁷

Project Interventions

To promote increased contraceptive use, the Health Education Division of the Ministry of Health conducted the Tanzanian Family Planning Communication Project from January 1991 through December 1994. The project was funded by the U.S. Agency for International Development (USAID), with technical assistance provided by the Johns Hopkins Center for Communication Programs—Population Communication Services.

This project was designed to educate women and men of reproductive age about the health benefits of modern contraception. Supporting messages encouraged Tanzanians to visit family planning service sites, to discuss family planning with their spouse, to space their children and to have only the number of children they could afford to care for adequately. In addition, the messages provided information on available contraceptive methods, emphasizing that modern methods are effective and safe and have health and

economic benefits for the entire family.

Between April 1993 and October 1994, family planning messages were disseminated through the mass media, print materials and various promotional activities. The major media channels and products were:

- **Radio spots.** Throughout the campaign (April 1993–October 1994), 10 radio spots were broadcast in Kiswahili on Radio Tanzania, the national radio station. The spots were designed to generate interest in a radio serial drama and logo campaign, to encourage people to visit family planning sites, to provide general information about family planning and its benefits, and to promote trained family planning providers. These spots were also included on an audiocassette promoting spousal communication.

- **Radio serial drama.** A serial drama with family planning themes, *Zinduka!* ("Wake Up!"), was broadcast in Kiswahili on Radio Tanzania from October 1993 to October 1994. The 52 episodes were broadcast twice weekly at popular time slots in order to reach both male and female audiences.

- **Green Star logo promotional activities.** In May 1993, a new national family planning logo, the Green Star, was officially launched by Tanzania's president, Ali Hassan Mwinyi. The logo identified sites where family planning services, including supplies, were available. Between June and September 1993, activities to promote the new logo were held in three regions—Mbeya, Arusha and Mwanza. Promotional materials included decals for clinics, badges for trained providers, satchels for field workers, flags, brochures, posters, T-shirts and stickers. Two family planning songs were broadcast nationally, and the family planning logo was painted on buses and billboards.

- **Posters.** The Health Education Division developed three posters promoting family planning, service providers and service sites, as well as a wall chart on available contraceptive methods. In November–December 1993, about 10,000 copies of these materials were distributed in six pilot project regions in Tanzania. The regions (Kilimanjaro, Coast, Dodoma, Rukwa, Ruvuma and Dar es Salaam) were selected to represent the major, distinct cultural groups of Tanzania. Posters, leaflets and other print materials were placed in health clinics, on buses and at public gathering places, such as kiosks, markets and bus terminals. More print materials and wall charts were disseminated in all 20 regions of the country between May and October 1994.

- **Leaflets.** Four leaflets on available contraceptive methods—long-term, barrier and permanent methods—were developed. In March 1994, the leaflets were re-

vised to reflect new service delivery protocols. More than 4,000 leaflets were distributed to clinics and other locations.

- **Newspapers.** Journalists and project staff published several articles in the major English and Kiswahili newspapers. The articles promoted family planning, advertised the service sites and reported on population and family planning activities.

- **Audiocassettes.** More than 100 audiocassette tapes were distributed in two regions (Kisarawe and Mwanza) during September and October 1993. Designed to promote better husband-wife communication, the 60-minute cassette contained family planning songs, radio spots, poems and excerpts from the radio serial drama.

All of these materials were used in a project known as the Green Star Project, which began in January 1995. Its major goal was to launch the family planning logo nationwide to enable clients to identify sources of information and services. The radio serial drama resumed in September 1995 and ran for an additional 12 months.

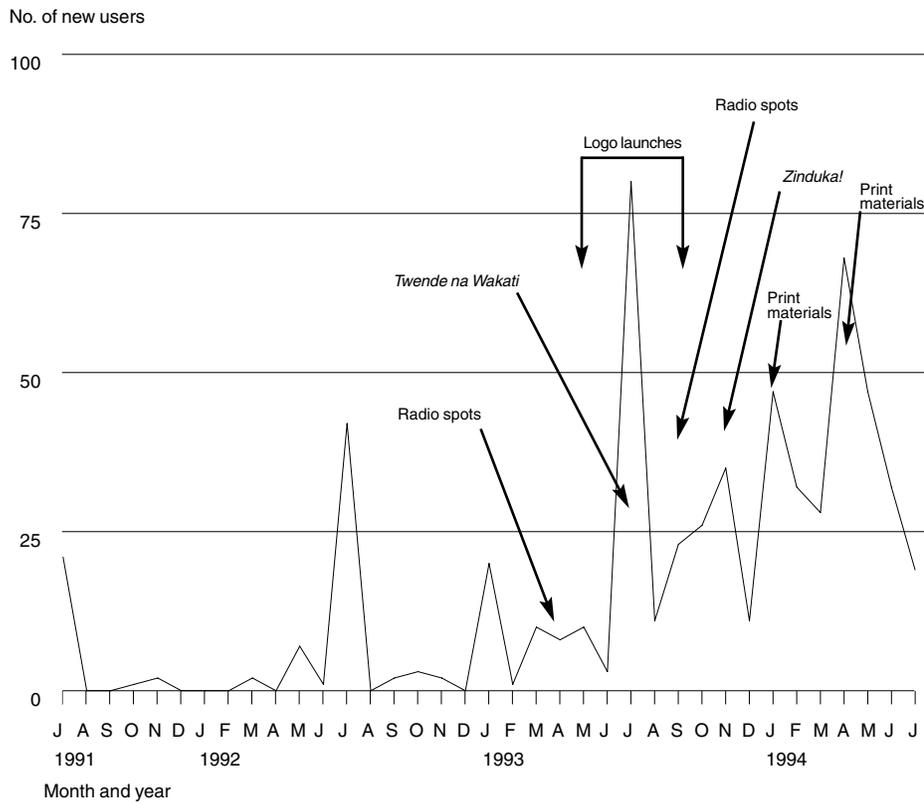
Nonproject Interventions

The Health Education Division's family planning campaign was complemented by communications interventions sponsored by other Tanzanian and international agencies during the 1992–1994 period:

- The Tanzanian Family Planning Association (UMATI) produced two radio dramas for youth and men. A drama aimed at youth, *Umkatae*, promoted abstinence and responsible sexual behavior. The 12 half-hour episodes were broadcast weekly between March 1993 and June 1994. In addition, a drama for men, *Haki za Uzazi*, encouraged male involvement in family planning; it was first aired in March 1994. UMATI also produced a poster depicting the health risks associated with having numerous, closely spaced pregnancies.

- The Population Family Life Education Programme of the Ministry of Culture, Women's Affairs and Children produced *Twende na Wakati* ("Let's Go with the Times"), a radio serial drama on family planning and the prevention of HIV and AIDS.* From July 1993 to July 1994, the 30-minute radio drama was broadcast twice weekly in seven regions (Kigoma, Kilimanjaro, Mbeya, Mtwara, Mwanza, Pwani and Tabora). In July 1994, broadcasts began in Dodoma and Singida, which originally had been designated as the control regions

*Population Communication International and the University of New Mexico provided technical assistance. The project was funded by the United Nations Population Fund, The Rockefeller Foundation, Weyerhaeuser Family Foundation and the Lang Foundation.

Figure 1. Number of women aged 15–49 who began using a family planning method, by month and year, according to family planning promotional activities

for the purpose of analysis.⁸

- In collaboration with the Ministry of Health, the German Association for Technical Cooperation (GTZ) produced a weekly radio variety show called *Afaya ya Jami*. Using interviews, talks and skits, the show discusses various health issues, including family planning and AIDS prevention. It has been broadcast weekly on Radio Tanzania since February 1994.

- After television service was introduced in mainland Tanzania in June 1994, the National AIDS Control Programme broadcast family planning spots on two privately owned television stations during the World Cup soccer games. Since television reaches only urban areas and only about 2% of Tanzanians own one, the program has limited potential for public education.

- The Tanzania AIDS Prevention Project has involved the private sector in HIV and AIDS prevention activities since late 1992 through education, training and social marketing of condoms (with Population Services International). Salama[®] condoms are being marketed through the non-

governmental organizations, nonsite programs and other commercial channels. More than four million Salama condoms were sold in the first year.

Methods

Data Sources

The 1994 Tanzania Knowledge, Attitudes and Practice Survey (TKAPS 94) was designed to assess changes in health and family planning since the 1991–1992 Tanzania Demographic and Health Survey (DHS).⁹ Both surveys were funded by USAID, and were conducted by the Bureau of Statistics with technical assistance from Macro International, Inc.

TKAPS 94 had a smaller sample size and fewer questions than the 1991–1992 DHS, but otherwise was comparable in research design and methodology. TKAPS 94 used the 1991–1992 DHS sample frame to select 433 wards, 203 census enumeration areas from these wards (146 urban and 57 rural) and 4,023 households from these enumeration areas. The urban primary sampling units had an average cluster size of 20.7 observations (range, 8–42). Rural clusters had an average size of 21.0 observations (range, 9–42). TKAPS 94 used a three-stage, multicluster sampling design. Four of the 20 mainland regions

were oversampled; thus, some cases had to be weighted to produce a nationally representative sample. Interviews were conducted with 4,225 women aged 15–49 between July and September 1994.*

Macro International, Inc., the government of Tanzania and Johns Hopkins University–Population Communications Services collaborated in the design of the TKAPS 94 questionnaire to make the survey more useful in evaluating communications interventions. The standard DHS questions on information, education and communications were expanded. Specific questions on exposure to the Ministry of Health radio serial drama, *Zinduka!*, and to the logo promotion campaign were added. Respondents were asked about exposure to other media sources, such as television and print, but no specific materials were mentioned.

Study Variables

The analysis presented in this article uses three sets of variables: Background social and demographic characteristics serve as a control; exposure to media channels is the independent variable; and contraceptive use and two variables representing intermediate measures of behavior change (spousal communication and visit to a health center) serve as the dependent variables.

Six social and demographic variables that are often associated with contraceptive behavior and media habits were used in the analysis: the respondent's place of residence (urban or rural), educational attainment, age, marital status, number of surviving children, and radio and television ownership.

Women were asked whether they had heard, seen or read any family planning messages in the last six months in five media channels—radio, newspapers, posters, leaflets and television. Additionally, respondents were asked specifically whether they had heard *Zinduka!* or had seen the family planning logo campaign. Therefore, they were asked if they could name up to seven media sources with family planning messages. (Although *Zinduka!* is analyzed separately, it is also included in the analysis of radio exposure, along with the GTZ health education program, the drama *Twende na Wakati*, and other radio spots and programming.)

Contraceptive behavior was measured as current use of any contraceptive method, any modern method or a traditional method. The nine family planning methods included in the questionnaire were the pill; the condom; the diaphragm,

*Additional information on the survey sample design, methodology and instruments can be obtained from either the Government of Tanzania, Bureau of Statistics Planning Commission, Dar es Salaam, Tanzania, or from Macro International, Inc., Calverton, MD, USA.

Table 1. Percentage of women aged 15–49 who reported media exposure to family planning messages in preceding six months, by media type and number of media sources, Tanzania, 1994 (N=4,225)

Media exposure	%
Any media exposure	54.8
Type of medium	
Radio	48.9
<i>Zinduka!</i>	23.4
Logo campaign	15.6
Newspaper	22.6
Poster	17.6
Leaflet	8.1
Television	4.4
No. of media sources	
1	19.6
2	12.1
3	8.5
4	6.4
5	5.1
6	2.5
7	0.8

jelly or foam; the IUD; the injectable; vasectomy; tubal ligation; withdrawal; and calendar rhythm, the “mucus” method and other, traditional methods. Method knowledge was indicated by the spontaneous recall of a method or by the recognition of a method after it was described by the interviewer.

Three variables related to contraceptive use and specific outcomes from the program activities—spousal approval of family planning, discussion of family planning with one’s spouse within the past year and a visit to a family planning service site within the past year—were included in the analysis. These variables represent important steps in the behavior change process.

Statistical Methods

Bivariate analyses were used to examine the characteristics of respondents and differences in media exposure and contraceptive behavior. We used multiple logistic regression to estimate the fit of the three models and the relative effects of exposure to any of the media sources of family planning messages, while controlling for all media and background variables.* The odds ratios obtained from this analysis estimate the relationship of each independent variable to the outcome (dependent) variable, while simultaneously taking into account all other variables.

Results

Bivariate Analysis

•*Project activities.* Figure 1, which presents data for women who began using modern contraceptives,[†] indicates that contraceptive acceptance increased dramatically after the dissemination of the family planning

materials, greater use of the media and various promotional activities. This upward trend began in March 1993 and peaked between July and September 1993. A second, and apparently more sustained, peak was observed between December 1993 and April 1994. These peaks roughly correspond to the periods in which mass media materials were disseminated. However, there could be a lag of about one or two months before the effects of exposure to family planning materials are observable. This delay between receiving information, making a decision and taking an action seems plausible, especially for new users. The effects of exposure to family planning information appear to take about two months.¹⁰

•*Exposure to media sources of family planning messages.* About 55% of the women were exposed to media sources of family planning messages within the six months preceding TKAPS 94 (Table 1). Radio was the most widespread source of family planning information, reaching 49% of respondents. Roughly half of those identifying radio as a source of family planning messages, or 23% of all respondents, recalled hearing *Zinduka!* Almost as many respondents reported seeing family planning messages in newspapers. Posters reached 18% of respondents and leaflets reached 8%. Only 4% of women reported seeing family planning messages on television.

Of the 55% of women who recalled hearing or seeing family planning messages in the media, more than half (32%) remembered messages on only one or two media channels, while more than a third named 3–5 channels. Few women recalled all seven media channels.

Media exposure varied according to a variety of social and demographic characteristics (Table 2). Exposure was positively related to age, education level, urban residence, and radio and television ownership. Partner approval and partner discussion of family planning were also positively associated with exposure. There was no significant difference in exposure based on number of living children or on marital status.

•*Impact on contraceptive knowledge and use.* Contraceptive knowledge and use were closely associated with exposure to media messages about family planning. Of those women who recalled family planning messages in the media, nearly all (91%) had heard of at least one modern contraceptive method. In contrast, only 61% of the women who could not recall any such messages had heard of any modern method (Table 3, page 64). Similarly, current use of modern methods was far greater among women who re-

Table 2. Percentage of women aged 15–49 who recalled exposure to media messages about family planning in the preceding six months, by social and demographic characteristics

Characteristic	%
Age*	
15–19	48.0
20–34	61.0
35–49	47.1
Education*	
None	32.4
Some primary	50.1
Completed primary	68.2
≥secondary school	92.7
Residence*	
Urban	81.8
Rural	44.1
Number of surviving children	
0	51.6
1–2	62.3
3–4	57.0
5–6	48.3
≥7	44.6
Partner approves of family planning*	
Yes	72.0
No	46.5
Discussed family planning with partner*	
Yes	75.9
No	47.6
Married	
Yes	55.0
No	54.0
Radio ownership*	
Yes	75.7
No	37.4
Television ownership*	
Yes	94.9
No	54.0

*Differences across category are significant at $p < .001$.

called family planning messages than among those who did not (18% vs. 3%).

Current contraceptive use is higher among women who have been exposed to four or more media sources of family planning information than among women exposed to fewer than four sources (Figure 2, page 64). Contraceptive prevalence rises sharply as the number of media sources grows: Nine percent of women exposed to one media source were using a modern

*We chose logistic regression analysis for the following reasons: Both the independent and dependent variables are binomial variables; odds ratios are relatively easier to explain than coefficients; the underlying coefficients of logistic regression can be easily produced and examined; and the results of logistic regression display confidence intervals for the odds ratios as well as Pearson chi-square goodness-of-fit for testing model fit.

†These data do not include information on tubal ligation and vasectomy because data on these two procedures were compiled in yearly rather than monthly intervals. Additionally, an average of nine tubal ligations were performed every year; the number performed did not increase during the project. Moreover, during 1991–1994, few doctors were trained to perform tubal ligations and vasectomies.

Table 3. Percentage of women aged 15–49 who know of a contraceptive and who are currently using a method, by type of method, according to their exposure to media messages about family planning

Contraceptive	Total	Exposed to media messages	
		Yes	No
Know any method	79.3	91.4	64.8
Modern	77.7	91.1	61.4
Traditional	45.6	58.5	30.0
Currently use any method	17.6	25.4	8.2
Modern	11.2	17.6	3.4
Traditional	6.4	7.8	4.8

method, compared with 15% for two media sources, 19% for three and as high as 45% among women exposed to six media sources.

While the proportion of women currently using modern contraception peaks at exposure to six media sources, the proportion using traditional methods peaks at exposure to four (16%). The weaker association between number of media sources and use of traditional contraception is understandable, because traditional methods were not promoted in any of the media. The lack of association among women who recalled seven media sources may result from the small number of cases (34 women).

Multivariate Analyses

To determine the impact of exposure to multiple sources of family planning messages on contraceptive use, while controlling for selected social and demographic variables, we constructed and tested three multivariate logistic models. These assess use of any modern and traditional contraceptive method for women who are currently practicing contraception, while controlling for media exposure and social and demographic variables. The odds ratios generated from the analyses permit direct observation of the relative importance of each independent variable in predicting the likelihood of contraceptive use, compared with the reference category.

Based on chi-square analysis, the three models were found to have significant values, indicating that each model helps to explain variations in contraceptive use. A Pearson goodness-of-fit test showed that all three models fitted the data reasonably well.

The first model compares women who are currently using any contraceptive method with those who are not using any method, while controlling for media exposure and social and demographic vari-

ables (Table 4). Women exposed to one media source of family planning messages are 1.5 times as likely as women not exposed to any of the seven media sources of contraceptive information to be practicing contraception, while those exposed to six media sources are 9.2 times as likely as respondents who reported no exposure to any of the media sources to be currently using a method of contraception.

The comparison of women who are currently using a modern contraceptive method with those not using a modern method yields the highest odds ratios for media exposure, indicating that media exposure has the strongest effect on current use of modern contraceptive methods. For example, women exposed to one media source of family planning messages are 2.2 times as likely as those not exposed to be using a modern method, while those exposed to six media sources are 11.2 times as likely as respondents not exposed to any source to be currently using a modern method.

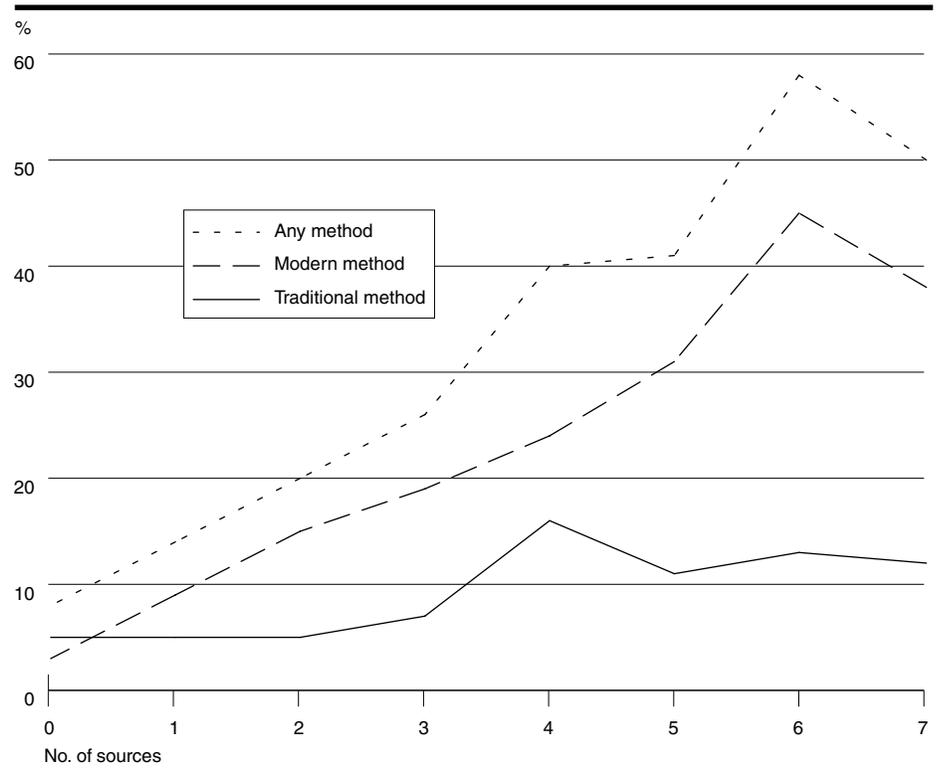
The final model compares women who are using any traditional method of family planning with women who are not using a traditional method. The results differ markedly from those for the other models: The odds ratios are significant only for exposure to 4–6 media sources, suggesting that media exposure has a

weak effect on use of traditional methods.

Odds ratios were also constructed to assess the relationship of exposure to the seven specific media sources and of eight social and demographic variables on three behaviors—discussing family planning with one’s spouse, visiting a family planning service site and currently practicing contraception. The univariate odds ratios in Table 5 (page 66) show that exposure to any one of the seven media sources was significantly related to whether women had discussed family planning with their partner or husband in the 12 months preceding the survey. After we controlled for the effects of other variables, the media sources with a statistically significant relationship to family planning discussion were radio exposure in general, newspapers and an independent relationship to the radio drama *Zinduka!* Not unexpectedly, partner’s approval of family planning was the strongest predictor of discussions about family planning.

TKAPS 94 did not collect data on women who had specifically visited family planning service sites. As a proxy for this variable, we used data for women who reported having visited a health care facility during the 12 months preceding the survey and who reported having received information on family planning during the visit. Of the 2,641 women who reported a visit, 25% reported receiving information about

Figure 2. Percentage of women aged 15–49 using a contraceptive method, by number of media sources of family planning messages that they know, 1994



family planning. Since these health care facilities make family planning services available to all clients, the created variable is a good proxy for the number of women who visited a family planning site. Therefore, it is not surprising that the logo campaign promoting family planning services was related to the likelihood that women had visited health facilities (odds ratio, 2.2). Other media sources—the *Zinduka!* radio drama and newspapers—revealed a weaker, albeit significant, correlation.

Exposure to radio messages about family planning showed significant and strong associations with two behaviors. Women who were exposed to general radio messages about family planning were 1.7 times as likely as women who were not to discuss family planning with their spouses and 1.9 times as likely to be current users of family planning. However, because women who were exposed to *Zinduka!* were also coded as having been exposed to radio, the effect of radio separate from *Zinduka!* cannot be determined. *Zinduka!* had a significant effect on the three behaviors: After the effects of other variables were controlled, women exposed to the messages about family planning in *Zinduka!* were 1.4 times as likely to discuss family planning with their spouse, 1.3 times as likely to have visited a family planning service site and 1.3 times as likely to be currently using family planning as women not exposed to the radio drama.

The logo campaign was also strongly associated with two behaviors; it was especially effective in increasing use of health facilities. Newspapers, posters and leaflets were not distributed nationwide until two months before the survey fieldwork commenced, so their overall effect was minimal. Not surprisingly, television had no impact when other factors were controlled for in the multivariate analysis. Low rates of television ownership and the fact that television spots began broadcasting during the survey fieldwork period most likely explain the lack of significant impact for television exposure.

Conclusion

We have found that women's exposure to media sources of family planning messages was associated with increased contraceptive use, especially that of modern methods. For example, only 3% of women who had not been exposed to any family planning messages in the media were using modern methods, compared with 18% of those who had been exposed to at least one media source of family planning information. Furthermore, use of modern methods

rose as the number of media sources increased, reaching 45% among women exposed to six media sources.

The media campaign appears to have been associated with use of traditional contraceptive methods as well. Although the campaign emphasized modern contraceptive methods, some messages discussed the benefits of family planning in general and its contribution to the health of the entire family. It is likely that some women motivated to practice contraception because of exposure to these messages might first seek a method that is easily available and has low psychic and actual costs. Traditional methods would meet these requirements.

Women exposed to family planning messages in the media were more likely than other women to discuss family planning with their spouses and to visit health facilities. These effects persist even after the effects of place of residence, age, education, marital status, parity, approval of family planning, partners' views on family planning and radio ownership are taken into account.

Each of the five media sources and the two specific program interventions (the *Zinduka!* radio drama and the Green Star logo campaign) were related to at least one of the three behaviors measured. Some of these relationships were not significant when controls for social and demographic variables were added. In general, however, the influence of media exposure, compared with social and demographic variables that are difficult or even impossible to influence, is impressive.

Of course, the issue of direction of causality is important: Did women recall multiple media messages on family planning because they were already using or intended to use family planning, or did the messages cause them to change their behavior? Total contraceptive prevalence in Tanzania in 1991–1992, before the national media campaign began, was only 10%, and modern method prevalence only 6%. Therefore, most of the women who re-

Table 4. Odds ratios (and standard errors) from logistic regression analyses showing the likelihood of current contraceptive use among women aged 15–49, by exposure to media sources of family planning information and social and demographic characteristics, according to type of method use

Source and characteristics	Any method vs. no method	Modern method vs. other/no method	Traditional method vs. other/no method
No. of media sources			
1	1.5 (0.1)***	2.2 (0.3)***	1.0 (0.1)
2	2.0 (0.3)***	3.4 (0.5)***	1.2 (0.2)
3	2.6 (0.4)***	3.8 (0.6)***	1.3 (0.2)
4	4.7 (0.8)***	4.9 (0.8)***	3.0 (0.2)**
5	4.8 (0.9)***	6.4 (1.1)***	2.0 (0.4)**
6	9.2 (2.3)***	11.2 (2.4)***	2.4 (0.5)**
7	6.4 (2.4)***	8.3 (2.1)***	2.1 (1.4)
Characteristic			
Is urban resident	1.3 (0.1)**	1.6 (0.2)***	0.8 (0.4)
Is aged 20–49	1.4 (0.2)**	1.2 (0.3)***	1.8 (0.4)*
Has some education	1.2 (0.1)	1.2 (0.2)	1.2 (0.1)
Is married	0.4 (0.1)***	0.4 (0.1)***	0.5 (0.1)**
Has surviving children	3.2 (0.5)***	3.0 (0.6)***	2.0 (0.4)***
Partner approves of family planning	1.5 (0.4)***	3.7 (0.4)***	2.1 (0.2)***
Has discussed family planning with spouse	1.5 (0.2)***	1.3 (0.2)*	1.5 (0.1)**
Owns radio	0.8 (0.1)**	0.8 (0.1)*	0.8 (0.1)
Owns television	1.4 (0.4)***	1.5 (0.4)	0.8 (0.6)
χ^2	697 (0.000)	587 (0.000)	136 (0.000)

*p<.05. **p<.01. ***p<.001. Note: Reference categories for media exposure variables are women not reporting any media exposure to family planning messages. Reference categories for social and demographic characteristics (other than for age) are their opposites; the reference category for women aged 20–49 is women aged 15–19.

called media messages on family planning were not already using or had not ever used contraceptives. Whether they were more predisposed toward use before exposure is impossible to tell without additional data or a longitudinal study following the same (or very similar) women over several years.¹¹

Nevertheless, it is well-recognized that becoming a regular user of modern contraception is a gradual and complex process. Few women adopt contraception immediately upon exposure to information about family planning. Yet continued exposure to similar messages through different media channels changes knowledge and attitudes and helps to create a climate in which family planning is perceived as a social norm. Interestingly, by 1994, 30% of women thought that most of the women they knew were using family planning, and another 29% thought that some of their peers were users.¹² In other words, about half thought that most or some of the women they knew were already family planning users—enough to make contraceptive practice normal and acceptable in many communities.

Using multiple media sources helps to extend the reach of family planning messages: The addition of each media source

Table 5. Odds ratios from univariate and multivariate analyses showing likelihood that women aged 15–49 have ever discussed family planning with their spouse, that they visited a family planning service site in the preceding 12 months and that they are currently using a modern contraceptive, by media sources of family planning information and social and demographic characteristics

Source and characteristics	Discussed family planning with spouse†		Visited family planning service site		Currently using family planning	
	Univariate	Multivariate	Univariate	Multivariate	Univariate	Multivariate
Media sources						
<i>Zinduka!</i>	2.9***	1.4***	1.8***	1.3***	4.1***	1.3*
Radio	3.3***	1.7***	1.4***	1.1	5.2***	1.9***
Logo	2.2***	1.0	2.9***	2.2***	5.1***	1.8***
Poster	2.4***	1.1	1.7***	1.4	4.1***	1.3*
Leaflet	2.6***	1.2	1.2	0.8	3.8***	1.2
Newspaper	2.7***	1.5***	1.2***	0.7***	3.9***	1.1
Television	1.6***	0.8	1.7**	1.2	3.4***	1.2
Characteristic						
Is urban resident	1.5***	1.0	1.6***	1.3**	3.2***	1.5***
Is aged 20–49	4.6***	0.9	1.6***	1.1	2.4***	1.1
Has some education	1.7***	1.2**	1.3***	1.3***	2.6***	1.2
Is married	na	na	1.4***	1.1	1.5***	0.4***
Has surviving children	5.9***	1.5**	1.6***	1.3**	3.0***	2.5***
Partner approves of family planning	15.6***	4.7***	1.5***	1.1	4.5***	3.5***
Approves of family planning	5.5***	1.6***	1.5***	1.1	13.0***	3.9***
Owens a radio	2.0***	1.1	1.0	0.7***	2.0***	0.8*

*p<.05. **p<.01. ***p<.001. †Married women only. Notes: na=not applicable. See note to Table 4.

increased the number of women reached, from 20% of women recalling family planning messages from one media source to 32% from two media, 41% from three media and 47% from four media. Multiple media sources appear to be complementary and reinforcing rather than duplicative.

We also found that exposure to more media sources had an incremental effect on contraceptive use. In general, the more media sources a woman is exposed to, the greater the likelihood that she will use a modern contraceptive method. Thus, women exposed to one media source have higher contraceptive prevalence than those with no media exposure, but prevalence is higher among women exposed to two media sources than among those exposed to one. The highest contraceptive prevalence is found among women exposed to six media sources. Not surprisingly, adding a seventh media source (television) did not raise prevalence, due to the limited access to television.

The programmatic implications of these findings are that multiple media channels should continue to be used to promote family planning and other reproductive health issues. The difference in contraceptive use between women exposed to 1–2 media sources and those exposed to 3–4 sources is striking. Priority should be given to media channels that reach large numbers of the intended audience, but supporting channels (such as print and interpersonal communication) should also be included in the media mix.

Among the media sources analyzed, radio reached the most women; nine out of 10 of those who recalled family planning messages in the media cited radio as one of their media sources. The benefits of specially produced materials can be seen in the effects of the radio drama *Zinduka!* Women who recalled it were more likely to talk about family planning with their spouses, to visit health facilities and to use contraceptives. These were the specific messages emphasized in *Zinduka!*

Although the family planning logo campaign reached fewer women than radio or newspapers, its close association with visits to family planning service sites suggests that community campaigns are worthwhile, and that visual symbols such as the logo help to publicize service sites. Recognizing the need to reach rural communities, the Ministry of Health is expanding logo promotion activities to more regions.

The opportunity for innovative communications programs remains. The family planning communications interventions in Tanzania reached at least 55% of reproductive-age women—a major accomplishment in a predominantly rural, media-poor country. Nevertheless, additional efforts are needed to reach the remaining 45% of women in this age-group. Furthermore, the number of young women entering their reproductive years is growing. Providing appropriate information to women in various stages of their life cycle is a further challenge for communicators.

Our findings suggest some new direc-

tions for communications research. While women can be motivated to adopt family planning after hearing a single message, the impact appears much greater when they are exposed to multiple sources of information about family planning over months and even years. The association between single message and single media source and impact is also contradicted by the gap between exposure and practice. Additional research is needed to determine how to meet women's information needs most efficiently and how to provide a continuous flow of information that is lively and interesting. Contraceptive use often entails a lengthy process of information-seeking and decision-making, and continued use requires regular reinforcement and renewed commitment. Thus, scattered family planning messages and short-lived campaigns are unlikely to provide adequate support to current or prospective contraceptive users.

Some media exposure appears to compensate for low educational attainment in raising levels of contraceptive use. While media promotion of health issues is no substitute for formal education, which has multiple benefits for women, it would be useful to learn more about ways to use radio and other media to provide information to illiterate women.

References

- Westoff CF and Rodríguez G, The mass media and family planning in Kenya, *International Family Planning Perspectives*, 1995, 21(1):26–31 & 36.
- Olaleye DO and Bankole A, The impact of mass media family planning promotion on contraceptive behavior in Ghana, *Population Research and Policy Review*, 1994, 13(2):161–177; Ryerson WN, Population communication international: its role in family planning soap operas, *Population and Environment: A Journal of Interdisciplinary Studies*, 1994, 15(4):25–264; Valente TW et al., Radio promotion of family planning in the Gambia, *International Family Planning Perspectives*, 1994, 20(3):96–100; and Piotrow PT et al., Men's attitudes and behavior: the Zimbabwe male motivation project, *Studies in Family Planning*, 1992, 23(6):365–375.
- Population Reference Bureau (PRB), 1996 *World Population Data Sheet*, Washington, DC: PRB, 1996; and Johnson O, ed., 1996 *Information Please Almanac*, Boston, MA and New York, USA: Houghton Mifflin, 1996, p. 273.
- Ministry of Health and Social Welfare, *The National Family Planning Programme: Plan of Operations 1989–1993*, issued by the Ministry of Health and Social Welfare, Dar es Salaam, Tanzania, Jan. 1989; and Magari F and Olson C, *Family Planning Services Support Project Technical Analysis Report Volume II*, United National Population Fund (UNFPA) and U.S. Agency for International Development (USAID), Dar es Salaam, Tanzania, May 1990.
- Ngallaba S et al., *Tanzania Demographic and Health Survey, 1991–1992*, Dar es Salaam, Tanzania: Bureau of Statistics; and Calverton, MD, USA: Macro International, 1993; Weinstein KI et al., *The Tanzania Knowledge, Attitudes and Practices Survey*, Dar es Salaam, Tanzania, Bureau of Statistics, Demographic and Health Surveys; and Calver-

ton, MD, USA: Macro International, 1995.

6. Eloundou-Enygyue PM, Meekers D and Calvès AE, *From Awareness to Adoption: The Effect of AIDS Education and Condom Social Marketing on Condom Use in Tanzania (1993–1996)*, Working Paper No. 17, Washington, DC: Population Services International, 1998.

7. Weinstein KI et al., 1995, op. cit. (see reference 5).

8. Vaughan PW, Rogers EM and Swalehe RMA, The effects of *Twende na Wakati*, an entertainment-education radio soap opera for family planning and HIV/AIDS prevention in Tanzania, a progress report on the first year of broadcasting (1993–1994) *Twende na Wakati*, 1995, paper presented at the second International Conference on Entertainment-Education and Social Change, Athens, OH, USA, 1997.

9. Weinstein KI et al., 1995, op. cit. (see reference 5).

10. Kincaid DL et al., Impact of a mass media vasectomy promotion in Brazil, *International Family Planning Perspectives*, 1996, 22(4):169–175.

11. Westoff CF and Rodríguez G, 1995, op. cit. (see reference 1); Olaleye DO and Bankole A, 1994, op. cit. (see reference 2); and Westoff CF and Bankole A, Mass media and reproductive behavior in Africa, *Demographic and Health Surveys Analytical Report No. 2*, Calverton, MD, USA: Macro International, 1997.

12. Weinstein KI, et al., 1995, op. cit. (see reference 5).

Resumen

Contexto: Las campañas de difusión de planificación familiar han demostrado que se logra un aumento del uso de anticonceptivos, aunque todavía no resulta claro si la recepción de estos mensajes sobre la anticoncepción a través de múltiples medios de comunicación tienen un mayor impacto que la transmisión a través de un solo medio.

Métodos: Se utilizaron datos de una muestra representativa a nivel nacional de 4.225 mujeres que participaron en la Tanzania Knowledge, Attitudes and Practice Survey, de 1994, y en la Tanzania Demographic and Health Survey, de 1991–1992, para evaluar el impacto de campañas de promoción de la planificación familiar por los medios de difusión en la conducta anticonceptiva. Se realizó un análisis de dos variables para estudiar la relación que existe entre la conducta anticonceptiva y las características sociales y demográficas, y las campañas de difusión de la planificación familiar; se utilizó un análisis de regresión múltiple para examinar la relación entre las campañas específicas y el uso de anticonceptivos.

Resultados: Cuanto más numerosos sean los

medios de comunicación a los que esté expuesta la mujer, mayores serán las probabilidades de que practique la anticoncepción. Las mujeres que recordaron seis medios de difusión en los que escucharon mensajes sobre planificación familiar eran 11 veces más proclives a practicar la anticoncepción, en comparación con las mujeres que recordaron un número menor o ninguna instancia en la que escucharon estos mensajes. Aun las mujeres que recordaban solamente una fuente de información en la que escucharon mensajes de planificación familiar, eran el doble de proclives a estar usando un método anticonceptivo moderno que aquellas que no recordaron ninguna fuente de información. Las mujeres que recordaban mensajes de planificación familiar en los medios de comunicación también eran más proclives a discutir el tema de la planificación familiar con su pareja y a haber visitado una clínica de salud que aquellas que no recordaban este tipo de mensajes. Después de introducir los controles para otras variables, las mujeres que recordaban los mensajes radiales sobre planificación familiar eran 1,7 veces más proclives que las mujeres que no habían estado expuestas a este tipo de programas radiales, a discutir con su pareja sobre temas de planificación familiar, y eran 1,9 veces más proclives a haber estado usando anticonceptivos en ese momento.

Conclusiones: Los medios múltiples de difusión de información sobre anticonceptivos se complementan e incrementan la cobertura de las campañas de planificación familiar. Los mensajes complementarios pueden asistir a crear un entorno en el que la práctica anticonceptiva sea percibida como una norma social. Deben continuar utilizándose diversos medios de difusión para promover la planificación familiar y otros temas de salud reproductiva.

Résumé

Contexte: Le rôle des campagnes médiatiques relatives au planning familial dans l'accroissement de la pratique contraceptive n'est plus à démontrer, mais il reste à établir si l'exposition à des messages originaires de sources multiples produit ou non une plus grande incidence que l'exposition à un seul média.

Méthodes: Les données obtenues d'un échantillon national de 4.225 femmes interrogées

dans le cadre de l'Enquête sur la connaissance, les perceptions et la pratique de la contraception en Tanzanie en 1994 et de l'Enquête démographique et de santé menée dans le pays en 1991–1992, ont servi de base à l'évaluation de l'incidence des campagnes médiatiques de planning familial sur les comportements contraceptifs. L'étude de l'association entre les caractéristiques socio-démographiques, les campagnes médiatiques sur le planning familial et les comportements contraceptifs a été menée par analyse bivariée, tandis qu'une analyse de régression multiple régissait l'examen du rapport entre les campagnes médiatiques spécifiques et la pratique contraceptive.

Résultats: Plus les femmes sont exposées à de nombreux types de médias, plus elles sont susceptibles de pratiquer la contraception. Celles qui se souvenaient de six sources médiatiques de messages de planning familial se sont révélées 10 fois plus susceptibles de pratiquer une méthode moderne que leurs homologues exposées à un nombre de médias moindre ou nul. Même les femmes qui ne se souvenaient que d'une seule source de message étaient une fois plus susceptibles de pratiquer une méthode moderne que celles qui ne pouvaient en évoquer aucune. Les femmes exposées à des messages médiatiques de planning familial étaient également plus susceptibles d'avoir abordé la question avec leur conjoint et de s'être rendues dans un centre de soins que celles qui ne se souvenaient d'aucune exposition. Après introduction de contrôles pondérateurs d'autres variables, les femmes qui se souvenaient de messages de planning familial entendus à la radio étaient 0,7 fois plus susceptibles d'avoir parlé de la question avec leur conjoint que leurs homologues sans exposition radiophonique, et 0,9 fois plus susceptibles d'en pratiquer une méthode.

Conclusions: Les sources d'informations médiatiques multiples sur la contraception se renforcent les unes les autres et étendent la portée des campagnes de planning familial. Les messages complémentaires peuvent contribuer à l'établissement d'un climat dans lequel la pratique de la contraception est perçue telle une norme sociale. Le recours continu à différents types de médias ne peut être qu'utile à la promotion du planning familial et d'autres questions d'hygiène de la procréation.