Are the Family Planning Messages Really Effective in Improving Family Planning Indicators in India

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Introduction

India was the first country to initiate a nationwide official family planning program in 1952 (1). High growth rate of the population results in shifting from clinical approach to extensive education through field workers and publicity through the mass media (2). Mass education media division was created in the department of family welfare in 1966-69 and can be said as the starting point of Information Education and Communication (IEC) programs to promote family planning (3). Mass media such as radio, television, posters, movies and interpersonal communications such as individual patient education and counseling group meetings etc. are important components of IEC to promote family planning programs (4). As part of the IEC strategy in Reproductive & Child Health Program, the government had chosen channels like television, radio and the print media for promoting the reproductive health issues (5). IEC is one of the main operational strategies in the National Population Policy implemented in 2000. Media such as radio and television is used for disseminating family welfare messages (6). The recent NRHM programme launched in 2005 has used IEC in a more decentralized model (7). The mass media has been looked as the important source of health communication mainly due to increased coverage and reach of mass media. The electronic media like radio has a network reaching 100 crores population, number of households having television set in were 82 million and total newspaper and periodicals being published in India in 2001 were 51,960 (8).

Family planning inputs has been implemented using similar program in all over the country, but the response to these programs can be expected to generate interstate and interregional

differentials in knowledge acceptance and fertility [9]. For example, states in south India are characterized by higher reproductive health indicators, higher level of mass media exposure and literacy level while states in north have lower level of reproductive health indicators and lower literacy and media exposure. According to NFHS-3 more than 80% of women in Tamil Nadu are exposed to family planning messages through mass media and in Uttar Pradesh only half or the fewer women's are exposed to family planning messages through mass media [10]. Table 1 highlights the differences in the level of mass media exposure and educational level among the currently married women in southern state of Tamil Nadu and northern state of Uttar Pradesh and their comparison with India. In Uttar Pradesh more than 60% women are having no education and exposure to family planning messages in different media is very low. Tamil Nadu and Uttar Pradesh shows wide differential in the exposure to mass media and education. Tamil Nadu has the higher exposure to mass media and family planning messages while in Uttar Pradesh these levels are very low. The level of exposure and education in these two states are below and above India.

The present study is an attempt to show whether different types of sources used in mass media helps to enhance family planning indicators in India and states such as Tamil Nadu and Uttar Pradesh. The study also examines the effectiveness of family planning messages in different media in India and two states with different level of media exposure and educational level and their comparison with India.

Data and methods

The data for the analysis has been taken from the two rounds of National Family Health Survey in India conducted in 1998-99 and 2005-06 [10,11]. NFHS-3 collected information from a nationally representative sample of India's population. The data of 93,089 and 83,649

currently married women age 15-49 from NFHS-3 and NFHS-2 is used in this study. The analysis is conducted for India and the two states Uttar Pradesh and Tamil Nadu. Uttar Pradesh in NFHS 3 was divided into Uttar Pradesh and Uttaranchal. Therefore for comparison and analysis purpose we have excluded Uttaranchal from NFHS 2 data. The family planning indicators used in the analysis are current use of any modern contraceptive and future intention to use contraceptive in the next 12 months.

Data for exposure to family planning messages in NFHS 2 and 3 was collected from all the women. All the women's were asked the question "In the last few months, have you heard or seen any message about family planning" in radio, in television etc. with "Yes" and "No" response. These messages were observed by the women in the last few months prior to the survey in 1998-99 and 2005-06. This question has given us an opportunity to access the effect of messages shown in different media towards family planning indicators. The main explanatory variable in this study exposure to family planning messages is classified by type of media such as radio, television, newspaper and other print media source. Simple bivariate analysis has been used to examine the level and changes in family planning indicators.

We modelled family planning outcome Y_i as a probit with explanatory variables X_i and the mass media exposure of family planning messages as variable D_i. The equation will be

$$Y_i^* = X_{i1}\beta_1 + D_i\delta + \varepsilon_{in}$$

And $Y_i = \{1 \text{ if } Y_i^* > 0 \;\&=0 \text{ if } Y_i^* < 0$

We model Y_i using a latent variable Y_i^* which represents the propensity for the particular outcome. The basis behind this characterization is that the positive outcome will be there only if Y_i^* exceeds an arbitrary threshold value equal to zero and outcome will be negative if Y_i^* does not exceed the threshold. The other explanatory variables which are controlled in

this model are age, exposure to mass media, household wealth index, women's education and husband education.

In this study an attempt has also been made to know the role of the different media in improving the family planning indicators using different statistical approach. We are measuring the effect of messages on family planning indicators using a measure called average treatment effect. Average Treatment Effect (ATE) studies the effect of the difference in family planning outcome for exposed and unexposed individuals to family planning messages. This measure was used in a study using data of cross sectional survey of Tanzania and Nepal to measure the role of family planning communication campaigns in family planning use and calculated it using regression analysis[12]. To calculate ATE a method called propensity score matching is used assuming that exposure to family planning is non-random and associated with only observed characteristics of the individual. Matching uses propensity scores which is calculated as the probability of getting exposed to family planning messages for a given currently married women i age 15 and above where i (i = 1...N) is conditional upon her observed characteristics. Estimation of the average treatment effect based on stratification involves calculating the propensity score using a standard probit model. The variables used for satisfying the balancing property were exposure to mass media and women education as they significantly effects the exposure to family planning messages among women.

Results

Table 2 provides percentages of currently married aged 15-49 using any modern method of contraceptive and future intention to use contraceptive in the next 12 months in India, Uttar Pradesh and Tamil Nadu by exposure to family planning messages. The increase in current use of modern contraceptive has been the highest among the women exposed to messages

through television (4.5%) and those who are exposed to messages through other print media sources (4.1%). Similarly, in Tamil Nadu and Uttar Pradesh television and other print media source are most effective in improving the use of modern contraceptive use among the users exposed to family planning messages. In Uttar Pradesh, the current use of modern contraceptive increased significantly among the women exposed to electronic and print media messages. The increase varies from 7% among radio messages to 11% among women exposed to other print media messages.

The intention to use contraceptive in next 12 months in India has also improved in this time period as seen in Table 2. The increase in the level of intention is higher among women exposed to family messages through mass media as compared to those who are not exposed. The significant change has been observed among women exposed to messages through radio and television messages. In Tamil Nadu, the level of intention to use contraceptive has been very low in the earlier period and over time increased from 8.6% to 15.5%. The increase in the level of intention has been highest among the women exposed to messages through television and print media (7%). In Uttar Pradesh, percent increase in the level of intention varies from as low as 0.8% among newspaper viewers to as high as 5.3% among women exposed to other print media messages.

[Insert table 2 here]

The family planning indicators has shown improvement among women exposed to different media messages. Though the effect of exposure to family planning messages to contraceptive use and intention to use contraceptive in next 12 months needs to be estimated after controlling the other explanatory variables like age, education, residence, wealth index, exposure to mass media at least once a week. Table 3 shows that after controlling other explanatory variables the exposure to family planning messages through radio, television and other print media sources has been significant and positively associated with current use of modern contraceptive and intention to use contraceptive in next 12 months in India at $p<0.01$. The use of modern contraceptive among women who are exposed to television is 6%, 3% and 7% higher in India, Tamil Nadu and Uttar Pradesh. Similarly, the other print media source also helps in improving the modern contraceptive use by 2-3% in India and both the states. The probit regression results also show that television is effective in improving the intention to use contraceptive by 2-3% in India and both the states. The print media source like newspaper has a positive effect on Tamil Nadu and negative effect on intention in India and Uttar Pradesh.

[Insert table 3 here]

An attempt has been made to deal with the Figure 1 shows the estimation results for pscore method for current use of modern contraceptive in India, Tamil Nadu and Uttar Pradesh. The average treatment effect for television (5.8) and newspapers (6.4) are highest as compared to the other media source. In Tamil Nadu, the treatment effect of television is highest followed by other print media. In Uttar Pradesh, the treatment effect of television (12.3) and newspapers (11.3) suggests that exposure to family planning messages leads to increase in the use of contraceptive use of modern method. The radio messages have not been much effective in India and Tamil Nadu while in Uttar Pradesh shows small effect. The effectiveness of media messages in Uttar Pradesh is very high as compared to India and Tamil Nadu showing greater role of media messages in the state where contraceptive use is low, but the effectiveness of family planning messages is high. Figure 2 shows the estimation results for pscore method for future intention to use contraceptive in next 12 months in India, Tamil Nadu and Uttar Pradesh. Different media sources irrespective of types are effective in motivating women to have an intention to use contraceptive except newspapers. In India Electronic media, especially television is most effective in motivating the women to have an intention to use contraceptive in next 12 months. In Tamil Nadu Television has the highest treatment effect (5.3) and are most effective in increasing the intention to use contraceptive among women. However exposure to print media has a lesser effect as compared to the electronic media. In Uttar Pradesh except newspapers every media has almost equal and uniform treatment effect on intention to use contraceptive.

[Insert Figure1 here]

Discussion

The study was an attempt to reveal the importance of mass media in family planning .The study especially focuses on how the exposure to family planning messages affects the family planning behavior in India, and the state of Tamil Nadu and Uttar Pradesh. An attempt has also been made to see the effectiveness of different media using the propensity score method. The results shows that family planning messages propagated in different mass media are effective in improving family planning indicators in India. The current use of contraceptive was more improved among women exposed to electronic media messages. Television has been more effective in improving the family planning indicators in India. Other previous studies also show that exposure to general television programming or to family planning messages on television was associated with current use of contraceptive in India [13,14] . This study shows that as compared to Tamil Nadu increase in contraceptive use is lesser among women in Uttar Pradesh. However the intention to use contraceptive increase has been higher among women exposed to mass media messages in Uttar Pradesh irrespective of type of media messages. Another studies using data from the earlier time that average intention of not to use contraceptive is very low in Uttar Pradesh and women are less likely to have the intention of not to use contraception [15] .

This study shows that exposure to family planning messages through electronic and print media are significantly associated with current use of modern contraceptive and intention to use contraceptive in the next 12 months. In this study the relationship of mass media messages exposure is not significant but positively associated with the family planning indicators outcome in most of the cases in Tamil Nadu. In Uttar Pradesh messages television significantly effects intention to use contraceptive in the next 12 months and other print

source significantly affects both family planning indicators. Studies in other countries and India also shows the presence of strong statistical association between women's reported of having heard or seen messages about family planning on electronic as well as print media and measures of reproductive behavior such as contraceptive use and reproductive preferences [16-19] . The effectiveness of mass media is not limited to one media source in India. Average treatment effect shows that different media sources are effective in improving family planning indicators. Average treatment effect shows that electronic and print media helps in increasing the performance of family planning indicators. The usage of multiple sources of media to promote family planning helps in further extension of the family planning campaign [20] . Some studies in India also shows that exposure to mass media is playing an important role in increasing the contraceptive use [21-23]. However, the type of media which is used to promote family planning programmes matters.

Limitations of this study

There were few limitations of this study. Firstly, this study does not estimate the effectiveness of any particular family planning campaign in any media. The purpose was to see the effect of family planning messages displayed in the last few months prior to the survey in different media on family planning indicators. Secondly we cannot say exactly whether exposure to family planning messages about health will be endogenous in models of family planning outcomes. Finally, in the absence of true experiments, we cannot know the exact magnitude of the bias introduced by using simple methods.

Conclusions

Using IEC campaigns to promote is very much part of family planning programmes in India. The results in the present study show that the mass media messages are playing a role in

improving family planning indicators in India. The current use of contraceptive has increased among women exposed to electronic media messages and other print media sources. Television has played an important role especially in improving the contraceptive use in India and Uttar Pradesh. This finding has importance in the concern that Uttar Pradesh where contraceptive use is low television messages is strong enough to motivate the women to use contraceptive. The role of print media is needed to be scrutinized in promoting the intention as well as use of contraceptive. Media messages are good enough to motivate the women's to at least have an intention to use contraceptive in next 12 months. This exposure has a differential impact as concerned to their behavior in using contraceptive and all type of media are not playing a uniform role in motivating the women's to use contraceptive. Mass media campaigns can produce positive changes or prevent negative changes in health-related behaviours across substantial group of population in any country [(24)]. Different media source had different level of effectiveness to enhance family planning use. Hence there is a need to relook at the effectiveness of the messages which are publicized in different media.

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Table 1. Percentage of currently married women age 15-49 by selected background characteristics, 2005-06.

	India	Tamil Nadu	Uttar Pradesh
Level of Education			
No education	47.2	25.5	62.8
Primary	15.4	23.4	11.7
Secondary	31.5	42.4	20.6
Higher	5.9	8.7	5.0
Exposure to Mass Media			
reads newspaper once a week	20.3	33.5	16.2
watches television once a week	21.9	17.9	29.6
listens radio once a week	26.4	31.9	37.0
Exposure to Family Planning Messages (in past few months)			
By radio	31.9	53.3	38.9
By television	47.0	76.7	42.4
By newspaper	19.3	31.0	13.2
By wall painting & hoarding	24.2	54.5	15.6

Table 2. Family planning indicators among currently married women aged 15-49 by exposure to family planning messages in India and selected states over the period of time.

	India		Tamil Nadu		Uttar Pradesh	
Exposure to family planning messages	**1998-99**	**2005-06**	**1998-99**	**2005-06**	**1998-99**	**2005-06**
Current use of modern contraceptive						
None of the source	34.4	42.7	46.5	58.2	15.4	22.3
Radio	47.5	48.7	51.6	58.5	25.7	32.7
Television	50.7	55.2	52.3	59.7	30.6	38.5
Newspaper	51.4	55.1	51.0	57.9	35.5	44.7
Other print media	51.0	55.1	52.3	59.6	31.4	42.0
Total	42.9	48.5	50.3	60.0	21.1	29.3
Future intention to use contraceptive in the next 12 months						
None of the source	16.1	19.2	7.4	8.4	19.2	20.5
Radio	18.9	24.2	9.4	16.1	23.5	27.5
Television	19.6	24.1	9.3	16.3	24.8	28.0
Newspaper	21.1	24.6	11.7	18.7	29.6	30.4
Other print media	19.6	25.3	10.5	17.5	27.2	32.5
Total	17.7	21.6	8.6	15.3	20.9	24.1

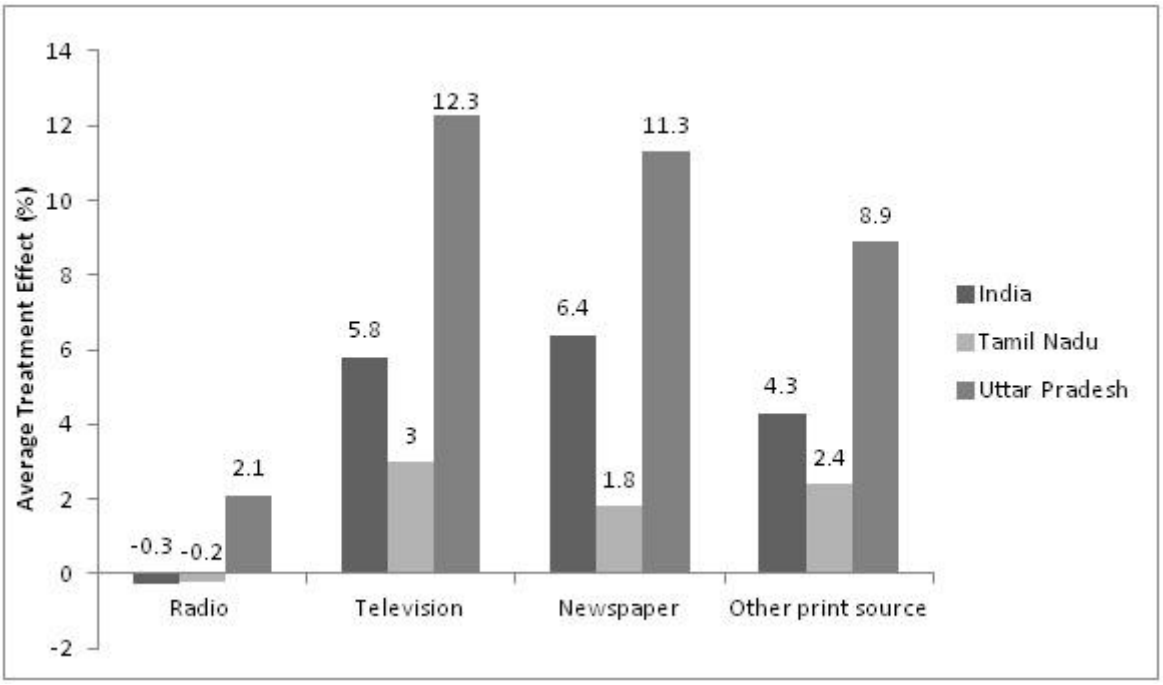
Table 3. Probit regression results for family planning indicators in India and selected states (2005-06).

	India		Tamil Nadu		Uttar Pradesh	
	β	**mfx**	**β**	**mfx**	**β**	**mfx**
Current use of modern contraceptive						
Exposure to family planning messages						
Radio	0.011***	-0.027	-0.043	-0.016	0.01	0.004
Television	0.012***	0.06	0.081	0.031	0.210***	0.074
Newspaper	0.015	0.01	0.023	0.008	0.009	0.003
Other print source	0.012***	0.024	0.083*	0.031	0.100*	0.036
Future intention to use contraceptive in the next 12 months						
Exposure to family planning messages						
Radio	0.061***	0.017	0.135	0.029	0.009	0.003
Television	0.089***	0.024	0.147	0.03	0.094	0.028
Newspaper	-0.047	-0.012	0.134	0.029	-0.126	-0.035
Other print source	0.087***	0.024	-0.01	-0.002	0.192**	0.059

Note: ***p<0.01**p<0.05 *p<0.10. Other background characteristics which are controlled are age, exposure to mass media, household wealth index, women Education and husband education.

Figure 1. Average treatment effect (in percent) of family planning messages through different media on family planning indicators in India and selected states, 2005-06.

Current use of modern contraceptive



Future intention to use contraceptive in the next 12 months