ORIGINAL ARTICLE

INFLUENCE OF MEDIA ON CONTRACEPTIVE USE: A CROSS-SECTIONAL STUDY IN FOUR ASIAN COUNTRIES

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Background: The most important factors contributing to poor state of maternal health continue to be early marriages, under-nutrition and high fertility rates in the context of low rates of contraceptive use. The aim of this study was to emphasize the influence of television on the contraceptive use in Asia. **Methods:** Publicly available cross-sectional survey data from Survey of Status of Women and Fertility (SWAF) was used. Logistic regression was used to estimate the odds ratios and to adjust for covariates, i.e., age, education and income. SAS-9.2 was used for statistical analyses. **Results:** Television watching is associated with increased contraceptive use, both in men and women. In India, the adjusted odds ratios for condom use in males and females were 1.9 (95% CI 1.2–2.9, $p=0.003$) and 1.8 (95% CI 1.1–2.9, $p=0.019$) respectively. In Pakistan the adjusted odds ratios were significant in females for condom with odds ratios of 1.9 (95% CI 1.1–3.3, $p=0.02$). In the Philippines the adjusted odds ratios for condom use were 1.6 (95% CI 1.01–2.46, $p=0.05$) in females and 2.5 (95% CI 1.66–3.79, $p<0.0001$) in males. In Thailand the adjusted odds ratios for condom use were 19.3 (95% CI 12.3–30.3, $p<0.0001$) in males and 1.5 (95% CI 1.32–1.83, $p<0.0001$) in females. **Conclusion:** Along with other factors affecting human behaviour, media is a very useful tool to influence health behaviours like family planning, on a large scale.

Keywords: Contraception, Media, Television, Condom, Reproductive Health

INTRODUCTION

The state of maternal health worldwide, though difficult to measure objectively, can be well-indicated by the Maternal Mortality Ratio (MMR). According to the latest statistics, in Pakistan, the MMR is 276 per 100,000 births annually.[1] The most important factors contributing to this gloomy state of maternal health continue to be early marriages, under nutrition and high fertility rates in the context of low rates of contraceptive use.[2]

Family planning is an important issue in all developing countries especially in South Asia.[3] In India and Bangladesh, fertility rates have dropped, with Sri Lanka already at a low rate. However, Pakistan and Nepal do not follow the trend of fertility decline in South Asia. Population trends indicate that girls are married off young, and start bearing children immediately. Fertility rate in Pakistan, for example, continues to remain high (4.1) even after the introduction of a government program endorsing family planning, and other improvements. Contraception is not used effectively in these two countries.[4] Notably, in Pakistan, where awareness of contraception stands at about 95%, the prevalence of contraceptive use remains relatively low (29.6%) in the country. There is a huge knowledge-practice gap. This gap may be recognised as one of the major reasons of oral contraceptive pill (OCP) failure and unwanted pregnancies.[5]

A team of American researchers in the 1970s demonstrated that television could influence the public's contraceptive use. Contraceptive awareness was directly proportional to the level of investment done in advertisements.[6] Since then, a number of public health campaigns have addressed contraception effectively. Some researchers believe that the low rates of unwanted pregnancies and abortions in the Netherlands are directly related to effective media resources spreading awareness amongst the public.[7]

In conservative societies within developing countries as well, various forms of mass media campaigns have had a positive and strong influence on the knowledge, practice and attitudes regarding contraception.[8] Research has shown that both TV and radio, via their family planning programming, influence the use of family planning methods. Pakistan, Bangladesh and India have influenced their populations' reproductive attitudes through family planning media programming. According to analyses of national survey data, women of these countries who had exposure to the media's family-planning campaigns were more likely to opt for a contraceptive technique than the women without any exposure.[9]

In addition, a particular respondent's place of settlement, literacy level, financial status, geographical region and the size of the family are among the crucial variables determining mass media contact with family planning[10] and thus the current use and continuation of contraception as well. The importance of media in this regard cannot be ruled out, especially the TV. Education through media is yet another contributing factor.[11,12] Though previous studies, as mentioned in lines above, have looked at the association between media and contraception use, our study is unique because of

diversity of our study population, which embraces different cultures, traditions, religions including Muslims, Hindus, Budhists etc. established in different South Asian geographical locations. The sample size is also substantial.

MATERIAL AND METHODS

The study used publicly available data from the Survey of Status of Women and Fertility (SWAF) a cross-sectional survey (http://swaf.sas.upenn.edu). The SWAF data was collected through interviews with married women ages 15–39 and their husbands in a total of 56 communities in India, Pakistan, Malaysia, Philippines and Thailand. In all countries except Thailand, the sample population was selected to attain desired variability on factors as religion, geographical location, economic status etc., and probability sampling was used at lower levels. In Thailand, national level random sampling was done. The method was described in detail elsewhere.[13] The exposure was measured by the question *'does anyone in the house hold own TV'*. The outcome was measured by the question *'Have you/your husband ever used condom'*, and *'have you ever used pills'* by women and their husbands. In our final sample study population the missing values for exposure or outcome were not included.

Data was stratified by contraceptive use into two groups, users and non-users. In both groups of contraceptive users and non-users, age was compared as a continuous variable, and education was categorised into three levels, i.e., primary [grade five], matriculation/high secondary (grade 10), more than matriculation, and its frequency was calculated. Income was divided into tertiles and frequency was compared between contraceptive users and non-users. Independent samples *t*-test and Chi-square tests were used to compute the *p*-values for continuous and categorical outcome variables respectively, and $p<0.05$ was considered significant. Binary logistic regression was used to estimate odds ratios and 95% confidence intervals. We used two approaches for analysing the data. First, we computed the association of interest, and then we did modelling to adjust for covariates, i.e., age, education and income. Separate analyses were conducted for men and women. Analyses were done for every country separately. SAS 9.2 was used for statistical analyses.

RESULTS

The subjects who own TV are more likely to use contraceptives compared with those who do not have TV at their home. The education and income contribute significantly towards increased contraceptive use, but even after adjustment of these, association between TV watching and contraceptive remain substantially strong.

In India, individuals with TV in their home were 80 to 90% more likely to use condoms and OCP, compared to those who did not have TV in their home (Table-1). The adjusted odds ratios for condom use (Table-2) in males and females were 1.9 (95% CI 1.2–2.9, $p=0.003$) and 1.8 (95% CI 1.1–2.9, $p=0.019$) respectively. The adjusted odds ratio for OCP use in women was 1.8 (95% CI 1.04–3.05, $p=0.036$). In Malaysia the analyses were not done because of the inadequate sample size.

In Pakistan women who had TV in their home were 90% more likely to use condoms (95% CI 1.1–3.3, $p=0.02$), and 2.6 times more likely to use OCP (95% CI 1.4–4.8, $p=0.003$) compared with their counterparts who did not have TV in their homes, after adjustment of covariates, e.g., education, income and age (Table-3). In men, when adjusted for age, income and education the relationship between media exposure and contraception use was not found significant with an odds ratio of 1.3 (95% CI 0.7–2.4, $p=0.49$).

In Philippines, (Table-4) women that had TV in their home were 1.6 times (95% CI 1.01–2.46, $p=0.05$) more likely to use condoms, and 1.73 times (95% CI 1.26–2.37, $p=0.0007$) more likely to use OCP, compared to those who did not have TV in their homes. Men who had TV in their home were 2.5 times (95% CI 1.66–3.79, $p<0.0001$) more likely to use condoms, compared to men who did not have TV in their home (Table-2). In Thailand, (Table-5) women with TV in their home were 1.5 times (95% CI 1.32–1.83, $p<0.0001$) more likely to use condoms and 1.81 times (95% CI 1.65–1.98, $p<0.0001$) more likely to use OCPs, compared with women who did not have TV in their homes. Men with TV in their homes were 20 times (95% CI 12.3–30.3, $p<0.0001$) more likely to use condoms compared to those who did not have TV at their homes.

DISCUSSION

Our findings, consistent with previous studies, demonstrated very strong associations between television exposure and use of contraceptives in all countries. Education and income[14] also influenced contraception use, but the association between TV exposure and contraception use often remained strong after controlling for these variables. A study in Pakistan demonstrated that main source of information affecting the common people is TV, followed by the friends and relatives.[15] The mean age of contraceptive use is usually higher in contraceptive user compared with non-user. Younger respondents were more likely to use condoms as compared with pills. We did our analyses only for condom and pills because these two are the most commonly used contraceptives.[16,17]

Table-1: Age distribution, education and income in contraceptive users vs non-users in India

Contraceptive	Gender	Covariate	Contraceptive User	Contraceptive Non-User	P-value
Pills	**Female**	**Age N** **Mean±SD** **95% CI**	87 30.1±5.0 29.0–31.1	1320 28.3±6.2 28.0–28.6	0.008
		Education N (%) No Education Less than Grade 5 Grade 5–10 Above Grade 10	20 (3) 38 (8.4) 25 (10.1) 4 (9.8)	644 (97) 416 (91.6) 223 (89.9) 37 (90.2)	0.000
		Income N (%) 0–9,600 19,601–18,000 >18,000	14 (3.6) 2 (5) 41 (8.2)	379 (96.4) 38 (95) 460 (91.8)	0.007
Condom	**Female**	**Age N** **Mean±SD** **95% CI**	117 28.07±6.0 27.0–29.2	1134 28.2±6.2 27.8–28.6	0.836
		Education N (%) No Education Less than Grade 5 Grade 5–10 Above Grade 10	47 (7.6) 30 (8.5) 36 (15.1) 4 (10.3)	572 (92.4) 324 (91.5) 203 (84.9) 35 (89.7)	0.008
		Income N (%) 0–15,600 15,601–28,500 >28,500	24 (7.0) 4 (11.8) 52 (11.1)	317 (93.0) 30 (88.2) 415 (88.9)	0.131
Condom	**Male**	**Age N** **Mean±SD** **95% CI**	154 33.8±7.2 32.6–34.9	1472 33.9±7.7 33.5–34.3	0.8
		Education N (%) No Education Less than Grade 5 Grade 5–10 Above Grade 10	15 (3.6) 32 (6.9) 57 (11.6) 50 (19.8)	401 (96.4) 434 (93.1) 434 (88.4) 203 (80.2)	0.000
		Income N (%) 0–9,600 9,601–18,000 >18,000	36 (6.8) 4 (9.1) 67 (13.3)	492 (93.2) 40 (90.9) 437 (86.7)	0.002

*Income was calculated in Indian Rupees

Table-2: Odds Ratios of contraceptive use with exposure of Television

India	Gender	Contraceptive		OR	95% CI	p
India	**Female**	**Pills** **N=1407**	Model 1 Model 2	2.8 1.8	1.76 -4.44 1.04 -3.05	<0.0001 0.037
		Condom **N=1251**	Model 1 Model 2	2.1 1.8	1.35 -3.14 1.10 -2.90	0.0008 0.019
	Male	**Condom** **N=1626**	Model 1 Model 2	3.0 1.9	2.08 -4.39 1.24 -2.86	<0.0001 0.0030
Pakistan	**Female**	**Pills** **N=1033**	Model 1 Model 2	2.9 2.6	1.61 -5.07 1.37 -4.76	0.0003 0.0032
		Condom **N=1034**	Model 1 Model 2	2.7 1.9	1.60 -4.34 1.11 -3.31	0.0001 0.0205
	Male	**Condom** **N=469**	Model 1 Model 2	1.8 1.3	1.02 -3.34 0.65 -2.44	0.044 0.489
Philippines	**Female**	**Pills** **N=950**	Model 1 Model 2	2.0 1.7	1.55 -2.69 1.26 -2.37	<0.0001 0.0007
		Condom **N=890**	Model 1 Model 2	2.0 1.6	1.35 -2.92 1.01-2.46	0.0005 0.0456
	Male	**Condom** **N=1000**	Model 1 Model 2	2.8 2.5	1.97 -4.05 1.66 -3.79	<0.0001 <0.0001
Thailand	**Female**	**Pills** **N=16485**	Model 1 Model 2	1.5 1.8	1.39-1.64 1.65-1.98	<0.0001 <0.0001
		Condoms **N=15736**	Model 1 Model 2	6.8 1.6	5.38-7.98 1.32-1.83	<0.0001 <0.0001
	Male	**Condom** **N=3902**	Model 1 Model 2	20.8 19.3	13.50-31.90 12.27-30.32	<0.0001 <0.0001

Model 1: Unadjusted   Model 2: Adjusted for Age, Education and Income

Table-3: Distribution of Age, Education and Income contraceptive in users vs. non-users, Pakistan

Contraceptive	Gender	Covariate	Contraceptive User	Contraceptive Non-User	P-value
Pills	Females	**AGE N** **Mean±SD** **95% CI**	50 31.2±4.9 29.8–32.6	983 28.4±6.3 28.0–28.8	0.002
		Education N (%) No Education Less than Grade 5 Grade 5–10 Above Grade 10	34 (4.1) 13 (8.9) 3 (6.4) 0 (0)	796 (95.9) 133 (91.9) 44 (93.6) 9 (100)	0.07
		Income N (%) 0–15600 15601–28500 More then 28500	15 (4.5) 0 (0) 21 (6.2)	322 (95.6) 1 (100) 316 (93.8)	0.57
Condom	Female	**AGE N** **Mean [SD]** **95% CI**	68 29.2 [5.7] 27.8-30.5	966 28.5±6.3 28.1–28.9	0.39
		Education N (%) No Education Less than Grade 5 Grade 5–10 Above Grade 10	40 (4.8) 24 (16.4) 2 (4.3) 1 (11.1)	791 (95.2) 122 (83.6) 45 (95.7) 8 (88.9)	0.000
		Income N (%) 0-15600 15601-28500 More then 28500	10 (3.0) 0 (0) 36 (10.7)	372 (97.0) 1 (100) 302 (89.3)	0.0004
Condom	Males	**AGE N** **Mean [SD]** **95% CI**	52 38.0 [7.1] 36.0-40.0	421 34.3±8.1 33.5–35.1	0.002
		Education N (%) No Education Less than Grade 5 Grade 5- 10 Above Grade 10	9 (5.7) 10 (8.3) 29 (16.8) 4 (19)	150 (94.3) 110 (91.7) 144 (83.2) 17 (81)	0.005
		Income N (%) 0–15600 15601–28500 More then 28500	13 (8.3) 0 (0) 23 (15.4)	144 (91.7) 0 (0) 126 (84.6)	0.052

*Income was measured in Pakistan Rupee

Table-4: Distribution of Age, Education and Income in contraceptive users vs. non-users, Philippines

Contraceptive	Gender	Covariate	Contraceptive User	Contraceptive Non-User	P-value
Pills	Female	**AGE N** **Mean [SD]** **95% CI**	324 30.5(4.8) 29.9-31.0	626 29.0±5.8 28.6–9.5	0.000
		Education N (%) No Education Less than Grade 5 Grade 5–10 Above Grade 10	11 (35.5) 40 (26.1) 64 (27.8) 209 (39)	20(64.5) 113 (73.9) 166 (72.2) 327 (61)	0.003
		Income N (%) 0-9,600 19,601–18,000 More then 18,000	87 (28.3) 1 (25) 139 (42.9)	220(71.7) 3(75) 185(57.1)	0.0006
Condom	Female	**AGE N** **Mean [SD]** **95% CI**	121 31.9 (5.1) 30.9–32.8	769 29.3[5.5] 28.9-29.7	0.000
		Education N (%) No Education Less than Grade 5 Grade 5–10 Above Grade 10	0 (0) 12 (9.1) 27 (12.4) 82 (15.7)	18 (100) 120 (90.9) 190 (87.6) 441 (84.3)	0.063
		Income N (%) 0–15,600 15,601–28,500 More then 28,500	26 (9.1) 0 (0) 57 (18.1)	261(90.9) 2(100) 258(81.9)	0.0048
Condom	Males	**AGE N** **Mean [SD]** **95% CI**	149 33.7 (6.5) 32.6–34.7	732 32.1 [7.0] 31.6-32.6	0.014
		Education N (%) No Education Less than Grade 5 Grade 5–10 Above Grade 10	0 (0) 11 (6.1) 25 (12.5) 113 (22.7)	4 (100) 168 (93.9) 175 (87.5) 385 (77.3)	0.028
		Income N (%) 0–9,600 9,601–18,000 More then 18,000	27 (9.2) 0 (0) 76 (25.6)	268(90.9) 4(100) 221(74.4)	0.001

*Income was measured in Philippine Peso.

Table-5: Distribution of Age, Education and Income in contraceptive users vs. non-users, Thailand

Contraceptive	Gender	Covariate	Contraceptive User	Contraceptive Non-User	*p*-value
Pills	Female	AGE N Mean [SD] 95% CI	1925 35.6[11.88] 35.1-36.2	782 37.3 [12.4] 36.5-38.2	.001
		Education N (%) No Education Less than Grade 5 Grade 5–10 Above Grade 10	0(0) 1045(71.6) 602(75.3) 266(63.2)	0(0) 412(28.2) 197(24.7) 153(36.3	.000
		Income N (%) 0–40,000 40,000–1,25,000 More than 1,25,000	4732(79.9) 1807(75.0) 3068(67.6)	1192(20.1) 603(25.0) 1472(32.4)	<.0001
Condom	Female	AGE N Mean [SD] 95% CI	599 36.1[11.8] 35.1-37.0	2013 36.1 [12.1] 35.6-36.7	.883
		Education N (%) No Education Less than Grade 5 Grade 5–10 Above Grade 10	0(0) 245(17.5) 172(22) 188(44.7)	0(0) 1147(82) 607(77.6) 229(54.4)	.000
		Income N (%) **0–15600** **15601–28500** **More then 28500**	820(14.7) 498(22.0) 1744(40.8)	4755(85.3) 1763(78.0) 2536(59.2)	<.0001
Condom	Males	AGE N Mean [SD] 95% CI	459 35.4 [7.4] 34.7-36.1	960 35.4 [8.8] 34.9-36.0	.933
		Education N (%) No Education Less than Grade 5 Grade 5- 10 Above Grade 10	0(0) 153(21) 116(30.1) 191(63)	0(0) 574(78.7) 268(69.4) 106(35)	.000
		Income N (%) 0-40,000 40,000-1,25,000 More than 1,25,000	1789(30.8) 1039(42.4) 1713(39.0)	4022(69.2) 1410(57.6) 2675(61.0)	<.0001

*Income was measured in Thailand Baht

A drawback of cross-sectional design is that it cannot establish causality because of lack of temporality but owing to the large and randomly collected sample, results can be generalized to the South Asian population, a substantial part of the world. Electronic media, most importantly the television, is a valuable tool to effectively influence family planning trends in developing countries.[18,19] Television can clarify the importance of family planning and demystify and publicize the various methods, and serve as a tool to broadcast important health information in an effective manner.[14,20] However, to realize television's potential, programming should engage in thorough demonstrations of family planning, and guide viewers to these services. The programming shouldn't be preachy and dull, but interesting and adapted to a particular place's cultural sensitivities. The program should be vigilantly prepared, evaluated, and revised so as to make it more reliable and effective. However, television has its fair share of flaws as well. TV sets are not very common in rural and remote areas – they are expensive and inaccessible. Moreover, to conduct such program, people with ample know-how of both broadcasting and family-planning are required, but there is a shortage of these professionals in the region. And TV then, is a one-way communication. It is exclusive, and the audience participation is not possible.[21]

CONCLUSION

Our study highlighted the importance of contraception programs and advertisements on television with the aim of enhancing the use of contraceptive methods. The use of media for health promotion is a strong way to influence health status of a population. The use of other modern media computer/internet and text messages on cell phones is also recommended.

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