

Association of Mass Media with Women's Health Risk Behavior and Service Utilization in Nepal

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ABSTRACT

Background and Objective: Mass media can be a powerful tool for promoting maternal health and improving health outcomes, but it is important to carefully consider the design and implementation of media campaigns to ensure their effectiveness. This study investigates the link between media exposure and maternal healthcare seeking in Nepal, providing insights to improve women's health and well-being. **Materials and Methods:** Data were collected from 14,085 women aged 15-49 across urban and rural areas of Nepal's seven provinces. Descriptive, bivariate and logistic regression analyses were conducted, considering individual, household and community-level variables to assess the association between mass media exposure and reproductive health outcomes among women in Nepal. **Results:** The findings showed, that in comparison with women with no media exposure, women with media exposure were more prone to health service utilization. Logistic regression models revealed significant associations between media exposure and non-smoking (OR = 1.78, $p = 0.001$), abstaining from alcohol (OR = 1.35, $p = 0.001$), menstrual hygiene management (OR = 1.59, $p = 0.001$), CPR awareness (OR = 1.26, $p = 0.001$), knowledge of HIV (OR = 3.17, $p = 0.001$) and HIV testing (OR = 2.55, $p = 0.001$). **Conclusion:** Media exposure among women in Nepal is linked to risky health behavior and increased health service utilization. This research informs targeted mass media campaigns for policymakers and healthcare practitioners, offering a potent tool to enhance maternal healthcare and overall health awareness in low-resource settings.

KEYWORDS

Media exposure, health behavior, service utilization, maternal health, Nepal Demographic and Health Survey (NDHS)

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INTRODUCTION

According to the Nepal Demographic and Health Survey (NDHS), from 1996 to 2016, the MMR decreased from 539 to 239 maternal deaths per 100,000 live births¹. Maternal health is a critical issue in Nepal, as the country has one of the highest maternal mortality rates in South Asia. Despite progress in recent years, the rate of maternal deaths remains high, with many women in Nepal lacking access to quality maternal healthcare services¹.

One factor that may impact maternal health in Nepal is media exposure. The media has the ability to shape public opinion and influence healthy behaviors and in the case of maternal health, media exposure can play a role in raising awareness about the importance of maternal healthcare and the risks associated with pregnancy and childbirth². Women who are expecting require accurate information about healthcare



services and the mainstream media (such as television, radio and newspapers) may provide this information². Along with serving as a source of information and pleasure, mass media also has a significant impact on how people, families and organizations make decisions³. Additionally, media exposure can also help to promote maternal health initiatives and policies and can provide a platform for women to share their experiences and advocate for their rights⁴.

The behavior of seeking reproductive healthcare can be explained by the sociocultural background, self-efficacy and belief systems of the individual⁵. Healthcare behavior modification is a difficult task, but numerous studies have been done on how to increase health literacy and encourage getting medical attention^{6,7}. Knowledge exchange and raising public awareness through various community activities have also had a good impact on maternity healthcare^{5,8}. In order to help communities, shape their health ideas and perceptions and rectify activities with unscientific foundations, health communication through a variety of conventional and electronic media serves as an effective information and awareness-building tool⁷. By learning about risk factors, preventive measures and the availability of professional services, women who have access to information about family planning via social media should be able to make better health decisions^{9,10}.

There aren't any empirical studies on the relationship between exposure to such media communication and maternal healthcare seeking in Nepal, though, at the moment. Overall, understanding the relationship between media exposure and maternal health in Nepal is crucial for improving the health and well-being of women in the country. By examining the role of media in shaping women's attitudes and behaviors related to maternal health, policymakers and healthcare providers can better identify and address the challenges facing pregnant women and new mothers in Nepal.

This study was carried out utilizing data from the Multiple Indicator Cluster Survey (MICS) 2019 in order to fill this research gap. This study sought to determine whether women's media exposure had any positive effects on their use of health services.

MATERIALS AND METHODS

The data for this study were obtained from the Multiple Indicator Cluster Survey, which is a comprehensive household survey conducted nationally and internationally. The MICS is regularly carried out in numerous developing countries, Nepal included, offering valuable insights into factors influencing child health, nutrition, education, development and overall well-being across diverse global regions. The MICS dataset encompasses information about households and their residents in both urban and rural areas of Kathmandu. This area is segmented into seven provinces and 77 districts. The survey sample was chosen using a two-phase, stratified cluster sampling method.

The Nepal MICS 2019 gathered data on media exposure, computer utilization and internet usage. The survey included 14085 women aged 15-49 years and captured details about their engagement with newspapers/magazines, radio and television. Use of media was defined as women who read a newspaper at least once a week or listened to the radio at least once a week or watched television at least once a week.

The variables for the study were the individual mother characteristics and household characteristics. Mother characteristics encompass the educational attainment (classified as non-literate/illiterate or literate) and their functional capabilities. Household-level attributes consist of the household wealth index, categorized as poorest, second, middle, fourth and richest. This index is evaluated based on household amenities, resources, assets and the presence of health insurance. Furthermore, this study incorporates three community-level variables: the place of residence (categorized as rural or urban) and the provincial level (comprising seven provinces). These variables were selected based on literature and their availability in the dataset.

Study duration and location: Multiple Indicator Cluster Survey was conducted from 12 May, 2019 to 8 November, 2019 in urban and rural areas of seven provinces of Nepal namely province 1 now named as Koshi Province, Province 2 (now named as Madhesh Province), Bagmati Province, Gandaki Province, Lumbini Province, Karnali Province and Sudurpashchim Province.

Ethics statement: As per the Statistical Act¹¹, the study protocol for the Nepal MICS survey was approved by the Central Bureau of Statistics (CBS) along with UNICEF. Since this study involved the analyses of publicly available anonymized secondary data, ethical approval from respective institutions was not required.

Statistical analysis: Data were extracted in SPSS (version 26) and convert to R program for further analysis. Data analyses in this study comprise descriptive analyses, bivariate analysis and logistic regression analyses. All the data were weighted to account for the complex sample design, such as stratified sampling and probabilities of unequal sample selection between regions. Pearson's Chi-square Test was used to determine mother's characteristics and household characteristics among mothers who use media.

The study employed logistic regression analysis to investigate the impact of various factors on the outcomes. To begin, individual determinants were introduced into the model one by one to assess their individual association with the outcome. Subsequently, complex logistic regression models were utilized to identify the most influential determinants for each outcome. Statistical significance was defined as a p-value below 0.05. The study utilized Adjusted Odds Ratios (AORs) alongside their corresponding 95% confidence intervals (95% CI) to illustrate the autonomous relationship between predictors and dependent variables. The entire statistical analysis was performed using the R program for statistical analysis.

RESULTS

Background characteristics: Table 1 presented illustrates the percent distribution of women aged 18-49 by background characteristics, including age, educational status, place of residence, province, wealth index quintile, health insurance, marital status and functional difficulty.

The mean age was found to be 29.81 ± 9.70 . More than three-fifth (69.4%) resided in urban areas and 30.6% resided in rural area. A great majority of women were from Bagmati province, followed by province five and province two, 24.9, 19.1 and 17.3%, respectively. Majority (22.6%) of them belonged to the richest quintile category. When asked about mother's education, more than one-third (37.2%) had completed their secondary education (grade 9-12) and 26.6% of them were illiterate. A majority (94.1%) of the women did not have access to health insurance. Likewise, majority of the women (75.5%) were currently married and 22.4% of them were never married.

Use of mass media by women: Table 2 presented below provides with information regarding number of women using media. More than four-fifth (88.0%) of the woman did not read a newspaper at least once a week. More than three-fourth (76.3%) of the woman did not listen to the radio at least once a week. Whereas, more than half (57.8%) of the women watched television at least once a week. Similarly, majority (95.9%) women did not use all three media at least once a week. More than three-fifth (67%) of the women used one of the media at least once a week. Majority (84%) of the women did not own a computer whereas, more than three-fourth (79.3%) of the woman owned a mobile phone. It was also found that more than half (57%) of the women did not have access to internet.

Comparison of social determinants by use of media: Table 3 presented below shows the comparison between social determinants by use of media. The findings revealed that indicators such as age, place of residence, province, educational status, marital status, number of children, wealth quintile was statistically significant for use of media ($p < 0.05$). Based on the residential setting, women belonging to urban area

Table 1: Distribution of women aged 18-49 by background characteristics

Background characteristics	Number (N = 14805)	Percentage
Age		
Mean±SD	29.81±9.70	
Educational status		
Illiterate	3945	26.6
Basic (Gr 1-8)	4021	27.2
Secondary (Gr 9-12)	5510	37.2
Higher	1328	9.0
Health insurance		
With insurance	853	5.8
Without insurance	13936	94.1
Don't know	16	0.1
Place of residence		
Urban	10281	69.4
Rural	4524	30.6
Province		
Province 1	2419	16.3
Province 2	2567	17.3
Bagmati Province	3684	24.9
Gandaki Province	1257	8.5
Province 5	2826	19.1
Karnali Province	798	5.4
Sudurpashchim Province	1255	8.5
Wealth index quintile		
Poorest	2613	17.7
Second	2836	19.2
Middle	2890	19.5
Fourth	3126	21.1
Richest	3339	22.6
Marital/Union status of women		
Currently married/in union	11183	75.5
Formerly married/in union	309	2.1
Never married/in union	3313	22.4
Functional difficulty		
Has functional difficulty	280	1.9
Has no functional difficulty	12975	87.6
Not applicable	1550	10.5

This table was generated by authors based on the statistical analysis of data set of the MICS

were using media more (65.2%) compared to women from rural setting (34.8%). Province wise, women from Bagmati Province were using media more (26.4%), followed by women from province 1 and Lumbini Province (14.9%) in comparison to women from other provinces. Whereas women from Karnali Province were the least (4.9%), followed by Sudurpashchim Province (9.7%) to use media. Women having educational status secondary and above were using media more (52.5%) in comparison to women without education (19.7%). The wealth index quintile results portray that women from richest quintile were using media more (22.8%) in comparison to women from poorest quintile (11%).

Comparison of health indicators by use of media: Table 4 reveals that indicators such as coverage of health insurance, use of cigarette and alcohol consumption, menstrual hygiene management, using family planning method, place of delivery of child and knowledge on HIV was statistically significant for use of media ($p < 0.05$). Women those having menstrual hygiene management were using media more (86.1%) in comparison to women who did not have menstrual hygiene management (13.9%). Place of delivery shows that women who had institutional delivery were using media more (97.4%) in comparison to women who gave home delivery (2.6%).

Further the findings show the factors associated with maternal health outcomes in multivariate logistic regression. The factors that were significantly associated with media use included no smoking, no alcohol

Table 2: Proportion of women by use of mass media

Questionnaire	Number (N = 14805)	Percentage
Read a newspaper at least once a week		
No	13023	88.0
Yes	1782	12.0
Listen to the radio at least once a week		
No	11290	76.3
Yes	3515	23.7
Watch television at least once a week		
No	6336	42.8
Yes	8469	57.8
All three media at least once a week		
No	14205	95.9
Yes	600	4.1
Any media at least once a week		
No	4884	33.0
Yes	9921	67.0
Own a computer		
No	12441	84.0
Yes	2364	16.0
During the last 3 months		
No	13736	92.8
Yes	1069	7.2
At least once a week during the last 3 months		
No	14028	94.7
Yes	777	5.3
Own a mobile phone		
No	3065	20.7
Yes	11740	79.3
Used a phone during the last 3 months		
No	1122	7.6
Yes	13683	92.4
At least once a week during the last 3 months		
No	2495	16.9
Yes	12310	83.1
Access to Internet		
No	8445	57.0
Yes	6360	43.0
During the last 3 months		
No	8741	59.0
Yes	6064	41.0
At least once a week during the last three months		
No	9585	64.7
Yes	5220	35.3

This table was generated by authors based on the statistical analysis of data set of the MICS

consumption, menstrual hygiene management, place of delivery, CPR, knowledge of HIV and Testing for HIV ($p < 0.05$). The odds of women who used media were more than 1.78 times not smoking [OR = 1.78 (95% CI: 1.58-2.01) $p = 0.001$] than women who did not use media. The odds of women who used media were more than 1.35 times to not consume alcohol [OR = 1.35 (95% CI: 1.23-1.40) $p = 0.001$] than women who did not use media. With regards to menstrual hygiene management, the odds of women who used media was more than 1.59 times to have menstrual hygiene management [OR = 1.59 (95% CI: 1.45-1.75) $p = 0.001$] than women who did not use media. In regard to CPR, the odds of women who used media were more than 1.26 times aware of CPR [OR = 1.26 (95% CI: 1.3-1.4) $p = 0.001$] to women without using media. Women who used media had three times more knowledge on HIV compared [OR = 3.17 (95% CI: 2.85-3.53) $p = 0.001$] to women without using media. In regard to women testing for HIV, women who used media were 2.55 times tested for HIV [OR = 2.55 (95% CI: 2.21-2.95) $p = 0.001$] to women without using media.

Table 3: Use of media by social determinants

Characteristics	Use of media			Test statistics (df)	p-value
	Yes 8332	No 4988	Total 13320		
Age					
Mean (SD)	30.4 (8.5%)	31.6 (9%)	30.8 (8.7%)	7.8 (13318)	0.001
Area					
Urban	5434 (65.2%)	2394 (48%)	7828 (58.8%)	381 (1)	0.001
Rural	2898 (34.8%)	2594 (52%)	5492 (41.2%)		
Province					
Province 1	1241 (14.9%)	607 (12.2%)	1848 (13.9%)	1489 (6)	0.001
Province 2	1217 (14.6%)	786 (15.8%)	2003 (15%)		
Bagmati	2201 (26.4%)	482 (9.7%)	2683 (20.1%)		
Gandaki	1214 (14.6%)	306 (6.1%)	1520 (11.4%)		
Lumbini	1244 (14.9%)	949 (19%)	2193 (16.5%)		
Karnali	409 (4.9%)	987 (19.8%)	1396 (10.5%)		
Sudurpashchim	806 (9.7%)	871 (17.5%)	1677 (12.6%)		
Education					
None	1641 (19.7%)	2453 (49.2%)	4094 (30.7%)	1522 (2)	0.001
Basic (Gr 1-8)	2313 (27.8%)	1371 (27.5%)	3684 (27.7%)		
Secondary and above	4378 (52.5%)	1164 (23.3%)	5542 (41.6%)		
Married					
Currently married/in union	7106 (85.3%)	4419 (88.6%)	11525 (86.5%)	64 (2)	0.001
Formerly married/in union	160 (1.9%)	141 (2.8%)	301 (2.3%)		
Never married/in union	1066 (12.8%)	428 (8.6%)	1494 (11.2%)		
Children					
Mean(SD)	1.7 (1.3%)	2.3 (1.6%)	1.9 (1.5%)	23 (13318)	0.001
Wealth quintile					
Poorest	916 (11%)	2217 (44.4%)	3133 (23.5%)	2662 (4)	0.001
Second	1540 (18.5%)	1183 (23.7%)	2723 (20.4%)		
Middle	1798 (21.6%)	897 (18%)	2695 (20.2%)		
Fourth	2176 (26.1%)	496 (9.9%)	2672 (20.1%)		
Richest	1902 (22.8%)	195 (3.9%)	2097 (15.7%)		

*p<0.001 and this table was generated by authors based on the statistical analysis of data set of the MICS

Table 4: Use of media by health indicators

Characteristics	Use of media			Test statistics (df)	p-value
	Yes 8332	No 4988	Total 13320		
Functional disability					
Yes	161 (1.9%)	129 (2.6%)	290 (2.2%)	6.2 (1)	0.012
No	8171 (98.1%)	4859 (97.4%)	13030 (97.8%)		
Health insurance					
Yes	600 (7.2%)	172 (3.4%)	772 (5.8%)	80 (1)	0.001
No	7732 (92.8%)	4816 (96.6%)	12548 (94.2%)		
Ever cigarette smoking					
Yes	565 (6.8%)	572 (11.5%)	1137 (8.5%)	87 (1)	0.001
No	7767 (93.2%)	4416 (88.5%)	12183 (91.5%)		
Current cigarette smoking					
Yes	222 (2.7%)	376 (7.5%)	598 (4.5%)	172 (1)	0.001
No	8110 (97.3%)	4612 (92.5%)	12722 (95.5%)		
Alcohol consumption					
Yes	1851 (22.2%)	872 (17.5%)	2723 (20.4%)	42 (1)	0.001
No	6481 (77.8%)	4116 (82.5%)	10597 (79.6%)		
Menstrual hygiene management					
Yes	7176 (86.1%)	3970 (79.6%)	11146 (83.7%)	97 (1)	0.001
No	1156 (13.9%)	1018 (20.4%)	2174 (16.3%)		
Current using family planning					
Yes	3256 (39.1%)	2121 (42.5%)	5377 (40.4%)	15.3 (1)	0.001
No	5076 (60.9%)	2867 (57.5%)	7943 (59.6%)		

Table 4: Continue

Characteristics	Use of media			Test statistics (df)	p-value
	Yes 8332	No 4988	Total 13320		
Ever used family planning					
Yes	1189 (14.3%)	583 (11.7%)	1772 (13.3%)	18.04 (1)	0.001
No	7143 (85.7%)	4405 (88.3%)	11548 (86.7%)		
Place of delivery of last child					
Home	220 (2.6%)	332 (6.7%)	552 (4.1%)	26 (1)	0.001
Health institution	8112 (97.4%)	4656 (93.3%)	12768 (95.9%)		
Attitude on gender violence					
Yes	2515 (30.2%)	1566 (31.4%)	4081 (30.6%)	2.15 (1)	0.142
No	5817 (69.8%)	3422 (68.6%)	9239 (69.4%)		
Hear about HIV					
Yes	6946 (83.4%)	2827 (56.7%)	9773 (73.4%)	1137 (1)	0.001
No	1386 (16.6%)	2161 (43.3%)	3547 (26.6%)		
Knowledge and misconceptions on HIV					
Yes	2114 (25.4%)	483 (9.7%)	2597 (19.5%)	489 (1)	0.001
No	6218 (74.6%)	4505 (90.3%)	10723 (80.5%)		
Tested for HIV					
Yes	993 (11.9%)	251 (5.0%)	1244 (9.3%)	174 (1)	0.001
No	7339 (88.1%)	4737 (95.0%)	12076 (90.7%)		

*p<0.001 and this table was generated by authors based on the statistical analysis of data set of the MICS

DISCUSSION

The study findings compare women aged 18-49 years with use of media by their background characteristics such as age, educational status, health insurance, place of residence, wealth quantile, marital status and status of functional difficulties. The study suggested that social determinants such as age, place of residence, province, educational status, marital status, number of children and wealth quintile were associated with the use of mass media. For instance, urban women were more likely to be exposed to the media compared to the rural women. Education-wise use of media shows that use of media was higher among educated than non-educated women. Similarly, the study shows an association between wealth quantile and the use of media. Wealthy women were more likely to be exposed to the media. In terms of disability, media use was higher among persons with no disability compared to the person with a disability. A study that examined media, knowledge translation and action on the social determinants of health also supports the findings from the study of Ndumbe-Eyoh and Mazzucco¹².

Risky health behavior and health outcomes such as the use of cigarette and alcohol consumption, menstrual hygiene management, use of family planning method, place of delivery of the child and knowledge of HIV showed a positive association with the use of media. One of the implications of this study brings is the more women are exposed to mass media, they are likely to have positive health outcomes. The study shows that a high number of women, who used mass media, delivered babies at health institutions compared to those who did not use or use mass media less. This finding followed the trends indicated by previous studies in other countries. For instance, mass media exposure was found to be independent contributor to various aspects of maternal health care including awareness raising about critical maternal health issues among women and stakeholders in Bangladesh and Nigeria^{4,5}. The study further found that a higher number of women who were exposed to the media used family planning methods and maintained menstruation hygiene compared to those women who were not exposed to media confirming other studies' findings showing positive influence of mass media messages with reproductive health such as family planning in the countries like Kenya, Uganda, Ghana, Bangladesh and other low and middle income countries¹³⁻¹⁷.

Other finding showed a positive association between media uses and HIV knowledge and health seeking behavior such as getting tested to confirm the status transmission in line with other studies in other parts of the world that found the use of media contributing to positive health outcomes related to HIV¹⁸⁻²⁰. The

study also found that HIV/AIDS knowledge was higher among individuals with high education levels potentially having greater exposure to the media.

A study highlighted, a noteworthy relationship that was observed between engagement with mass media and HIV testing among young individuals in Kenya and Nigeria, but this association was not evident in Zambia²¹. The results underscore an uptick in HIV testing among youth who had been exposed to mass media communication. The study's outcomes imply that consistent and preemptive media initiatives could potentially facilitate the spread of constructive notions among young people, ultimately fostering a culture of HIV testing.

The current study has also indicated association between the use of mass media and smoking among women showing a large portion of women who are not exposed to media involved in smoking compared to those who use the media. Although, this study does not include the type of content accessed by the media, health information is integral part of media contents. Health related Public service announcements and radio drama as well as information, education and communication materials constitute sizable portion in media content in Nepal. Therefore, media interventions are likely to influence people in positive way. This fact has been finding was similar to other studies that found specific media interventions such as health campaigns huge role in reducing risky behavior such as tobacco consumption and smoking among women^{22,23}.

Access to the mobile device and the internet has made it easy to access mass media content easily since mass media like radio and newspapers are available in digital format whereas television contents are also available in YouTube. Since health messages are also one of the prioritized contents by media, those women who access media may be likely to be aware of health issues. However, further research is required to know to what degree media contents impact the health outcome of women.

CONCLUSION

Our secondary data analysis shows an association between background characteristics and health outcomes of women in Nepal with the use of mass media. Exposure to the media is linked to the utilization of maternal healthcare services such as institutional delivery and regarding menstrual hygiene management, use of family planning methods and knowledge of HIV. Media's role can be pertinent in persuading the women with low-educated and encourage them to seek maternal healthcare services. Increasing access seems critical to reach out to them by policy makers and program implementers. Overall, mass media can be a powerful tool for promoting maternal health and improving health outcomes, but it is important to carefully consider the design and implementation of media campaigns to ensure their effectiveness. Media exposure can aid a woman in accessing healthcare services in bringing positive health outcomes in low resource settings such as Nepal.

SIGNIFICANCE STATEMENT

This research highlights a noteworthy correlation between media exposure and the uptake of vital maternal healthcare services, including institutional delivery, awareness of menstrual hygiene management, utilization of family planning methods and knowledge of HIV. These outcomes underscore the pivotal role that mass media plays in influencing women's healthcare-seeking behavior, particularly among those with lower levels of education. Media interventions hold the potential to effectively persuade and motivate these women to seek essential maternal healthcare services. As policymakers and program implementers endeavor to enhance women's access to healthcare, it becomes evident that increasing media accessibility is of paramount importance.

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