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Measurements of Media Exposure, Women Empowerment and Descriptive Analysis

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Abstract
The deregulation of media in 2002, resulted in a proliferation of private cable and satellite TV outlets in Pakistan. We take media exposure as TV viewership, listening to radio, and exposure to print media i.e. newspaper and magazines. In this paper we analyze the descriptive statistics of media exposure; women empowerment and a crosstab of media exposure and women empowerment by using the *Pakistan Demographic and Health Survey* (PDHS) data for the year 2017-2018. The data reveals that 35.7 percent of all ever married woman aged 15-19, are not exposed to any source of media. The data further reveals that only 1.9 percent of the women read newspaper or magazine and 2.5 percent the women listen to the radio. Furthermore, the data reveals that 40.5 percent women watch Television only. Moreover, only 2.8 percent of women are exposed to all the three sources of media, i.e. women who read the newspaper; listen to the radio and watch television. The data reveals that 50 percent of the women have very low empowerment, half of our respondents fall in this range, whereas almost 30 percent of the women are moderately empowered and make decisions jointly with their husbands and 7.1 percent of women have high empowerment and only 4 percent women are fully autonomous in their decision making. The cross-tabulation analysis between women empowerment and media exposure reveals a positive association between media exposure and women's empowerment. Women with no media exposure are predominantly clustered in the lowest empowerment group, whereas those with moderate and higher exposure show a noticeable shift toward middle empowerment categories. However, despite this positive relationship, the proportion of women in the highest empowerment categories remains very small across all media exposure levels.

1. INTRODUCTION

The deregulation of media in 2002, resulted in a proliferation of private cable and satellite TV outlets in Pakistan. We take media exposure as TV viewership, listening to radio, and exposure to print media i.e. newspaper and magazines. There are 123 satellite TV channels and 42 channels with landing rights permission in Pakistan. There are 265 FM radio channels. Moreover there were 4152 cable operators[1].

According to Maqbool (2021), total TV viewership in Pakistan is 144 million where 44 million are terrestrial and 96 million are cable and satellite viewership and 70 percent of the population own TV with young and adult people watching 120 minutes every day.

In this article we measure exposure to mass media as an indicator of general awareness. For this purpose, we rely on three sources of credible information, which are television, radio and print media (mainly newspapers). Exposure to social media is not considered because of two reasons. The first one is that the main source of

[1] Pakistan Economic Survey 2021-2022.

data used in this study *Pakistan Demographic and Health Survey* (2017-2018) does not contain the required information. The second and main reason for not including social media as a source of information is that the information presented is generally not credible; it is mostly biased by personal opinions, wishes or objectives. Furthermore, there is hardly a reliable and objective mechanism at place to determine whether certain information is based on proper research or it is just a guess of whim.

The article is organized as follows. We review literature regarding measurement of media exposure and measurement of women empowerment in Section 2. In Section 3, we present the methodology used in the study. In section 4 we discuss the data used in this analysis and in Section 5 we discuss the results of the descriptive analysis. Our conclusions are discussed in Section 6.

2 (a) LITERATURE REVIEW MEASUREMENT OF MEDIA EXPOSURE

According to DellaVigna and La Ferrara (2015), empirical evidence shows that most of the exposure to media on social and economic aspects relies on entertainment media such as television as opposed to the print media like newspapers and periodicals. One way to measure TV exposure is through the weekly frequency of TV watching. In a study for India Ting *et al.* (2014) measured the respondent's TV exposure as the weekly frequency of TV watching i.e. not at all; less than once a week; at least once a week; and almost every day. TV exposure in the study was calculated by giving the value of zero to the response 'never watch TV' and one otherwise. Another way to measure television exposure is by taking TV ownership as a proxy variable. La Ferrara (2016) measured exposure to television, proxied by TV ownership for 21 African countries. A dummy variable is used to indicate whether the household where the individual lived owned a television. Similarly, Tasciotti (2024) measured exposure to television by taking TV ownership as a variable for Pakistan. In addition, family planning commercials broadcasted on TV were also taken as a variable. In addition, the study also used exposure to a specific media content i.e. family planning commercials broadcasted on TV as a variable.

In addition, La Ferrara (2016) also used TV signal strength that allow for good reception as a determinant to buy a television. The rate at which the TV signal strength decays depends upon the distance between the transmitter and the viewer, the presence of mountains that may block the signal, the curvature of the surface, the frequency of the signal etc. When this information is put into the ArcGIS software, it is possible to predict a signal strength that captures an exogenous component of TV exposure which is conditional on geographic controls. The signal strength varied across the location where the respondent lived and not individuals. Similarly, Cheung (2012) used radio signal strength of various transmitters which was measured at the village level for each district. To predict the radio coverage for each transmitter, the data regarding the transmitter's location, its longitude and latitude, transmitter height above ground, its power and frequency, antenna gain and polarization were used. The coverage maps were created and the calculation of the coverage of a single transmission was based on the Irregular Terrain Model (ITM), which assumes that, in the absence of mountains, the strength of the signals declines proportionally with the inverse square of the distance between the transmitting and receiving locations.

Dasgupta (2019) used an index of women's exposure to mass media. The respondents were asked questions on how frequently they watched television, listened to radio or read a newspaper or magazine. For each form of the media, the individuals' responses were reported as having the frequencies: 0, 1, 2 and 3 indicating not at all, once a week, at least twice a week (less than once a week, at most once a week) and almost every day respectively. A mass media index was then constructed by summing up these frequencies with values ranging from zero to nine. In Jensen and Oster (2009) the focus of analysis on the introduction of cable television. The data for cable access was taken from a primary data set, and was based on information collected in a village questionnaire, thus cable was measured at the village level and not at the individual level. The study justified this measure based on the evidence that presence of cable increases the amount of TV watching. Okuyama (2021) measured radio exposure as proxied by district-level radio subscription rate, which was

defined as the share of households subscribing to radio. Furthermore, to gauge what kind of information the programs contained, a content analysis of the radio programs was done using Latent Dirichlet allocation which showed the year by year topic composition of the programs. Furthermore, radio exposure was also represented by an instrumental variable, the AM radio signal quality, which was measured by field strength. The field strength varied locally based on soil conditions, distance to nearby transmitters, transmission power and frequency.

Another way to measure exposure to a specific TV show is through television ratings. Kearney and Levine (2015) measured the viewership of a popular reality TV show by using the ratings data of Nielsen Corporation. Suitable data was used to generate 'rating points' which represent the percentage of population that watched the show episode.

In a study on fertility, separation and divorce in Brazil, Chong and La Ferrara (2009) and La Ferrara, Chong and Duryea (2012) measured the signals of the network that broadcasts soap operas using a dummy variable with value equal to 1 if the area received a signal (one year prior, to account for the duration of pregnancy in the case of fertility study) and 0 otherwise. From the broadcasting network, information was collected on the year and location of broadcasting and retransmitting antennas and also their radial reach. This information provided the record of which municipios received the network signal and the year in which they first started receiving it. This information was then matched with each AMC (Brazil's Minimally Comparable Ares) corresponding to each municipio to construct the variable of signal strength which is equal to 1 if the AMC is within the radius of the network broadcasting or retransmitting station or 0 otherwise.

2 (b) LITERATURE REVIEW MEASUREMENT OF WOMEN EMPOWERMENT IN PAKISTAN

In their study Jensen and Oster (2009) proposes that all women in the household aged 15 and older are asked, 'who makes the following decisions in your household: 1) obtaining health care for yourself; 2) purchasing major household items; 3) visiting or staying with family members or friends?'. The responses are "(i) Respondent (ii) Husband (iii) Respondent jointly with husband (iv) Other household members (v) Respondent jointly with other household members". These responses are measured as binary indicators of whether a woman participates in the decision either by herself or jointly with others in the household. Furthermore, women are also asked if they needed permission from their husband to: 4) visit the market 5) visit friends or relatives. The responses were coded on a scale of 1 to 3, 'do not need permission, need permission, not permitted at all'. Moreover, women are also asked: 6) if they were allowed to keep money aside to spend as they wished. The above six variables are averaged to generate a single measure of household decision making and normalized to 0 to 1 range with higher values indicating greater autonomy.

Similarly, in Ting *et al.* (2014) married women who are usual residents of the household are asked five questions: 'who usually makes decisions on (1) your own healthcare; (2) visits to see your family or relatives; (3) major household purchases; (4) purchases for daily household needs; (5) using your husband's earnings?'. The responses are, 'mainly you', 'mainly your husband', 'you and your husband jointly', and 'someone else'. The answers are then scaled into an indicator with values of 0, 0.5 and 1 in which 0 refers to wife not participating in the decision making process, 0.5 means wife making decision jointly with husband and 1 refers to wife making decisions by herself. The decision making or 'autonomy' variable is constructed by averaging the values of the above five questions and scaling from 0 to 1.

Similarly, Mishra and Sam (2016) construct three binary indicators of household decision making process i.e. own healthcare; major household purchases; and visits to family or relatives. The sample is restricted to women who are currently married and residing with their husbands. These variables equal one if the woman has final say, alone or with husband, in the above three decisions or zero otherwise. An aggregate measurement of empowerment is used by summing the above three binary variables into an ordered scale from zero to three where three indicates the highest level of empowerment. Moreover, a binary indicator is created to gauge a woman's sole autonomy in decision making with a value of one if a woman is a sole final

decision maker in any of the three household decisions or zero otherwise. This results in a strict definition of empowerment.

Another way to address household decision making is to ask key questions and keep each indicator as a separate measure of empowerment. The rationale behind this approach is that such surveys ask a variety of different questions regarding decisions that not only differ in their importance but also in the way different members of the household are affected. Dasgupta (2019) adopted this approach rather than making an index of autonomy like the studies by Jensen and Oster (2009) and Ting *et al.* (2014). In the study, the questions, "who usually decides how to spend money?" and "who usually decides how to spend own earnings?" are answered as: respondent herself; respondent jointly with husband; her husband alone or others. The answers are then coded as 1, 0.5 or 0 with 1 signifying women making the decisions herself, 0.5 when women make decisions jointly with husband and 0 when decisions are made by husbands or others in the household.

To measure financial independence of women, key questions are asked and the answers are coded on a scale. Ting *et al.* (2014) uses the variable "having a savings account for personal use" which is a binary variable with 1 indicating yes and 0 otherwise. Dasgupta (2019) uses three binary variables for financial independence of women, that are captured by the questions, whether the respondent has a savings account or a bank account; whether she has knowledge of loan programs and whether she has money that she alone can decide how to use. The answers are coded with 1 for yes and 0 otherwise. The freedom of movement of women is captured by asking specific questions and the responses are then coded on a scale. Dasgupta (2019) asked the questions if women were allowed to go to the market; a health facility; and outside the village or community. The responses were allowed to go alone; go with someone else; or not at all and the responses were coded with values of 1, 0.5 and 0 respectively.

3. METHODOLOGY

To construct the mass media index, we use the following questions that women are asked, do you 1) read a newspaper or magazine? 2) listen to the radio? 3) watch television? The responses are i) at least once a week; ii) less than once a week; iii) not at all. For each form of the mass media, the individuals' responses are coded as 0 indicating not at all and 1 indicating less than once a week or at least once a week respectively.

An index of women's exposure to mass media is constructed such that the response of women who do not read newspaper, watch television or listen to the radio are coded as 0, those who are exposed to only one source of media exposure e.g. newspaper is coded as 0.5, those who are exposed to two sources of media exposure e.g. newspaper and radio are coded as 0.75 and finally those women who are exposed to all three sources of media exposure e.g. newspaper, radio and television are coded as 1.

To measure decision making power of women, the following key questions are asked from currently married women: 'who usually makes decisions about' 1) healthcare for yourself; 2) making major household purchases; 3) visits to your family or relatives; 4) how your husband's earnings will be used; and 5) how the money you earn will be used? The possible responses for each question are i) the respondent, ii) husband, iii) respondent and husband jointly, and iv) any other person(s).

The responses are coded with values 1, 0.5 and 0, with 1 indicating the woman making the decisions herself, 0.5 signifying that the woman makes decisions jointly with husband and 0 when decisions are made by husbands or any other person(s). The decision making variable is constructed by aggregating the values of the above five questions using principal component analysis.

4. DATA SOURCES

The data for analysis in the study is taken from *Pakistan Demographic and Health Survey* (PDHS) for the year 2017-18. The data for the control variables is also taken from PDHS for the year 2017-18. The PDHS survey is represented at the national level and covers all four provinces i.e. Punjab, Khyber Pakhtunkhwa, Sindh and Balochistan as well as it includes Azad Jammu and Kashmir(AJK), Gilgit Baltistan and Islamabad

Capital Territory (ICT) and Federally administered Tribal Areas (FATA). The PDHS survey included all ever married women aged 15-49 and included all women who were either permanent members of the household or were visitors who stayed in the household a night before the survey. In the survey a total of 15,671 households were selected out of which 15,051 were occupied.

In the study we used the PDHS data because it includes data of exposure to mass media of ever married women aged 15-49. The three media sources included are watching television, reading the newspaper and listening to radio. In addition, this data also has a detailed section on women empowerment from where we use the questions related to decision making power of women.

5. RESULTS

We can see in Table 2.1 that 35.7 percent of all ever married woman aged 15-19, are not exposed to any source of media. The data further reveals that only 1.9 percent of the women read newspaper or magazine and 2.5 percent the women listen to the radio. Furthermore, the data reveals that 40.5 percent women watch Television only. Clearly, the share of respondents who watch Television is the highest.

Similarly, the share of women who both read the newspaper and listen to the radio is only 0.5 percent. The data further reveals that 12 percent of the women both read the newspaper and watch television and 4.1 percent of the women both listen to the radio and watch television.

Furthermore, only 2.8 percent of women are exposed to all the three sources of media, i.e. women who read the newspaper; listen to the radio and watch television.

Table 2.1: Summary Statistics of Media Exposure

Exposure to	Value of Media Index	Percentage of Respondents
None	0	35.7
Newspaper only	0.5	1.9
Radio Only	0.5	2.5
Television Only	0.5	40.5
Newspaper and Radio	0.75	0.5
Newspaper and Television	0.75	12
Radio and Television	0.75	4.1
Newspaper, Radio and Television	1	2.8
Total		100

We can see from Table 2.2 that 50 percent of the women have very low empowerment, half of our respondents fall in this range. Hence, 50 percent of the women in our data cannot make decisions alone regarding their own healthcare, making major household purchases or visits to family and friends. Furthermore, these women cannot decide how their own earnings and their husbands' earnings will be spent.

Furthermore, 12.8 percent of women have slightly better conditions than the lowest group**,** but empowerment is still relatively weak. These women also rely on others in the household to make decisions regarding their own healthcare, making major household purchases or visits to family and friends. Moreover, these women

cannot decide how their own earnings and their husbands' earnings will be spent.
The data further reveals that almost 30 percent of the women are moderately empowered and make decisions jointly with their husbands regarding their own healthcare, making major household purchases and visits to family and friends. These women decide jointly with their husbands' how their own earnings and their husbands' earnings will be spent.
Moreover, in the data only 7.1 percent of women have high empowerment. The data shows that very few women experience high empowerment and only 4 percent women are fully autonomous in their decision making, i.e. only these women make decisions alone regarding their healthcare; making major household purchases and visits to family and friends. These women are fully autonomous to decide how their own earnings and their husbands' earnings will be spent.

Table 2.2: Summary Statistics of Women Empowerment

Empowerment Index	Percentage of Respondents
0-0.2	50
0.2-0.4	12.8
0.4-0.6	30
0.6-0.8	3.1
0.8-1	4
Total	100

We can see from table 2.3 that a total of 35.6 percent of the women who have zero exposure to media in our data, so a large share of women has no exposure to media. Out of these women 22.7 percent women have very low empowerment and hence rely on others in the household to make decisions for them regarding their healthcare; making major household purchases and visits to family and friends. These women have no control on how their earnings will be used and their husbands' earnings will be used. The data further reveals that as 7.6 percent of these women are moderately empowered and decide jointly with their husbands' to make decisions regarding their healthcare; making major household purchases and visits to family and friends. These women jointly decide with their husbands' on how their own earnings and their husbands' earnings will be used.
Furthermore, we can see that only 1.8 percent of women have high empowerment, above 0.6 percent and only 1.2 percent of these women are fully autonomous in their decision making regarding their healthcare; making major household purchases and visits to family and friends and decide alone on how their own earnings and their husbands' earnings will be used.
Furthermore, 45 percent of the women are exposed to only one source of media like watching television or reading the newspaper or listening to the radio. The data reveals that 20.2 percent of these women fall in the low empowerment category and therefore are dependent on others in the household to make decisions for them regarding their healthcare; making major household purchases and visits to family and friends. These women have no control on how their own earnings and their husbands' earnings will be used.
We see that 15.2 percent of these women fall in the mid empowerment category which is an improvement from the women with no exposure to media. Hence 15.2 percent women decide jointly with their husbands to make decisions regarding their healthcare; making major household purchases; visits to family and friends

and jointly decide with their husbands' on how their own earnings and their husbands' earnings will be used. Slightly more women appear in the high empowerment category i.e. 3.6 percent, above 0.6 percent and 2 percent of these women are fully autonomous in making decisions regarding their healthcare; making major household purchases; visits to family and friends and decide alone on how their own earnings and their husbands' earnings will be used. Moderate exposure is associated with movement toward moderate empowerment, suggesting media may help improve knowledge and attitudes.

The data reveals that 16.6 percent of the women in our data are exposed to two sources of media like reading the newspaper and watching television etc. We can see that only 6.2 percent of these women lie in the lowest empowerment category which is clearly an improvement. Hence, here fewer women rely on others to make decisions for them regarding their regarding their healthcare; making major household purchases and visits to family and friends and on how their own earnings and their husbands' earnings will be used.

We see that a noticeable share of women is moderately empowered i.e. 6.1 percent. These women decide jointly with their husbands to make decisions regarding their healthcare; making major household purchases; visits to family and friends and jointly decide with their husbands' on how their own earnings and their husbands' earnings will be used.

The data shows that fewer women remain in the high empowered categories and only 0.7 percent women are fully autonomous in their decision making in the household whereby they themselves decide about their healthcare; making major household purchases; visits to family and friends and they decide alone on how their own earnings and their husbands' earnings will be used.

Moreover, a very small share of women only 2.8 percent of women are exposed to all three sources of media i.e. reading the newspaper; watching television and listening to the radio. We see that with very high media exposure, the percentage of women in the low empowerment categories drop further.

We see that only 0.8 percent of women remain in the lowest empowerment category. These women are dependent on others to make decisions for them regarding their healthcare; making major household purchases; visits to family and friends and how their own earnings and their husbands' earnings will be used. Whereas we see that only 0.3 percent women are highly empowered, above 0.6 percent, and only 0.1 percent women are fully autonomous in making decisions for themselves. Furthermore, only 1.1 percent women are moderately empowered and make decisions jointly with their husbands regarding their healthcare; making major household purchases; visits to family and friends and in deciding how their own earnings and their husbands' earnings will be used.

Table 2.3: Crosstab of Summary Statistics of Women Empowerment and Media Exposure

Empowerment Index / Media Exposure	0-0.2 (%)	0.2-0.4 (%)	0.4-0.6 (%)	0.6-0.8 (%)	0.8-1 (%)	Total (%)
0 (%)	22.7	3.4	7.6	0.6	1.2	35.6
0.5 (%)	20.2	6.1	15.2	1.6	2	45
0.75 (%)	6.2	2.7	6.1	0.8	0.7	16.6
1 (%)	0.8	0.6	1.1	0.2	0.1	2.8
Total (%)	50	12.8	30	3.2	4	100

6. CONCLUSION

The data shows that 35.7 percent of all ever married woman aged 15-19, are not exposed to any source of media. The data further reveals that only 1.9 percent of the women read newspaper or magazine and 2.5 percent the women listen to the radio. Furthermore, the data reveals that 40.5 percent women watch Television only. Clearly, the share of respondents who watch Television is the highest.

Similarly, the share of women who both read the newspaper and listen to the radio is only 0.5 percent and 12 percent of the women both read the newspaper and watch television while 4.1 percent of the women both listen to the radio and watch television.

Furthermore, only 2.8 percent of women are exposed to all the three sources of media, i.e. women who read the newspaper; listen to the radio and watch television.

The data reveals that 50 percent of the women have very low empowerment, half of our respondents fall in this range. Hence, 50 percent of the women in our data cannot make decisions alone regarding their own healthcare; making major household purchases or visits to family and friends and these women cannot decide how their own earnings and their husbands' earnings will be spent. Whereas almost 30 percent of the women make decisions jointly with their husbands and 7.1 percent of women have high empowerment and only 4 percent women are fully autonomous in their decision making, i.e. only these women make decisions alone regarding their healthcare; making major household purchases and visits to family and friends. These women are fully autonomous to decide how their own earnings and their husbands' earnings will be spent.

The cross-tabulation analysis between women empowerment and media exposure reveals a positive association between media exposure and women's empowerment. Women with no media exposure are predominantly clustered in the lowest empowerment group, whereas those with moderate and higher exposure show a noticeable shift toward middle empowerment categories. This pattern suggests that access to media may enhance awareness, information, and attitudes that support greater autonomy and participation in decision-making.

However, despite this positive relationship, the proportion of women in the highest empowerment categories remains very small across all media exposure levels. This indicates that while media exposure can play an enabling role, it is not sufficient on its own to achieve substantial empowerment. Broader socio-cultural norms, economic opportunities, and institutional support likely continue to shape women's empowerment outcomes. Overall, the findings highlight that media exposure is an important but partial driver of women's empowerment.

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