ORIGINAL ARTICLE

Can Electronic Media Play Role in Polio Eradication in Pakistan? Secondary Analysis of Pakistan Demographic and Health Survey 2012-2013

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ABSTRACT

Objectives: The Main objective was to find the role of electronic media on received polio vaccine doses (1,2,3,0) in households in all regions of the country. The intention was to compare polio vaccination in households who had exposure to electronic media, TV and radio, with households who had no exposure to electronic media.

Methodology: Pakistan Demographic and Health Survey (PDHS) 2012-13, third countrywide survey, data was used for the study. In the survey, 14,000 households were selected (6,944 in urban areas and 7,056 in rural areas) and there were 12,943 occupied households. From these occupied households, 13,558 ever-married women and 3,134 ever married men age 15–49 were interviewed. SPSS Multinomial Logistic Regression analyses was used to see the statistical significance and to investigate the association between electronic media (radio and TV) and polio vaccine doses (1,2,3,0). A p-value of <0.05 was considered to be statistically significant.

Results: Television was more effective than radio in polio vaccination. Children from households who had TV and radio received more polio vaccine doses (1,2,3,0) than children from households who had no TV and radio. Households who had television, had significantly higher polio vaccinated children, vaccination dates on cards and vaccination reported by mothers than those households who had no TV.

Rural areas of the country, without radio and TV in households, have more polio unvaccinated children than urban areas. In Balochistan rural areas, households without radio had 37.7% to 76.3% and households without TV had 37.3% to 80.5% polio unvaccinated (1,2,3,0) children which is the highest deprived percentage in the country.

Radio and TV were statistically significant and had an association with polio vaccine doses (0,1,2,3).

Conclusion: Electronic media, TV, and radio, has an important role in polio vaccination and can play vital role in polio eradication in Pakistan. Proper designing and delivery of powerful media messages at the proper time can create awareness about polio, change behaviour and attitude for polio vaccination.

Key words: Poliomyelitis, Electronic Media, Pakistan, Vaccination

Introduction

Poliomyelitis (Polio) is a viral disease which mainly affects children under five years of age. Poliovirus is mainly transmitted through faecal-oral route and oral secretions. The virus invades nervous system and can cause paralysis. Unfortunately, there is no treatment for polio and It can only be prevented by vaccination and immunization.[1] Without immunization, the immune system takes more than a week to learn how to fight off unknown organisms and that time is enough for growing/spreading germs to develop the disease.[2]

In May 1974 Expanded Programme of Immunization (EPI) was started by the World Health Assembly to save children globally and in 1988, it adopted a resolution for the worldwide eradication of polio.[3] In Pakistan, EPI was started in 1978 with the objective of eradication of polio by 2012.[4]

During 2016, a total of 7,847 Acute flaccid paralysis (AFP) cases were reported in Pakistan. in Punjab province, 3939 were the highest reported cases.[5] It is estimated that about 300,000 children of less than five years of age are living in polio endemic areas in Pakistan (6). Although, in Pakistan there is decline in polio cases, but they have never been interrupted.[7]

In Pakistan, poor knowledge about vaccination/immunisation and negative attitude along with religious factor decrease polio vaccination ([8]). The re-emergence of polio cases in Pakistan show a threat to communities at regional and international level ([9]). Director-General of WHO has warned the international spread of wild poliovirus and announced it a Public Health Emergency of International Concern (PHEIC).[10]

Mass media can change attitude, create awareness[11], minimise fear and motivate people for polio vaccination.[12] Electronic media (radio, TV) can educate population[13], and being a powerful tool, it should be used to target the desired communities.[14] Electronic media can have an impact on polio vaccination.

Main objective of this study was to find role of electronic media on received polio vaccine doses (1,2,3,0) in households in all regions of the country. The intention was to compare polio vaccination in households who had exposure to electronic media, TV and radio, with households who had no exposure to electronic media.

Methodology

Pakistan Demographic and Health Survey (PDHS) 2012-13 was the third survey conducted in Pakistan as part of global Demographic and Health Survey (DHS) program. The survey was conducted in all regions of Pakistan excluding Azad Jammu and Kashmir (AJK), Federally Administered Tribal Area (FATA), and restricted military and protected areas. The field work of survey was done from October 2012 to April 2013.

Systematic sampling technique was applied and 14,000 households, 6,944 in urban areas and 7,056 in rural areas, were selected. From 13,464 occupied households, 12,943 households were interviewed. From selected households, 13,558 ever-married women and 3,134 ever married men age 15–49 were interviewed. The response rate of women was 93% and 79% of men.

Statistical Package for the Social Sciences (SPSS) version 21 was used for cross tabulation to formulate tables to assess role of electronic media with received polio vaccine doses (1,2,3,0) in all regions of the country. The relationship between radio and television (independent variables) and polio vaccine doses (dependent variables) was tested by SPSS Multinomial Logistic Regression analyses. A p-value of <0.05 was considered to be statistically significant.

Results

Radio exposure in households and polio vaccination

Table I shows received polio vaccine doses (1,2,3,0) in households who had no radio, while table 2 shows received polio vaccine doses (1,2,3,0) in households who had radio exposure.

Tables I and II demonstrate that children received more polio vaccine doses, (1,2,3,0,) in households who had radio exposure than children who had no radio exposure in households. Children from households who had radio, received higher polio vaccine doses (1,2,3.0) and vaccination reported by mothers than children from households who had no radio. In contrast, vaccination dates on cards of received polio vaccine doses (2,3,0) were more in households who had no radio than households who had radio.

In rural area of Balochistan, 76.3 % children in households without radio did not receive polio 0 dose, and it was the highest percentage in the country.

Table I: Households having no radio and polio vaccination in all regions of the country (PDHS 2012-13)

Polio vaccine doses received	Responses of households having No Radio	Regions & responses in % (N=8659)									
		Islamabad	Punjab		Sind		Khyber Pakhtunkhwa		Balochistan		Gilgit Baltistan
			Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	
Polio 1	No	11.5	5.9	5.9	12.7	20.8	13.4	26.5	21.8	37.7	12.4
	Yes, vaccination date on card	35.0	38.9	28.9	31.1	5.8	31.4	25.7	9.9	2.6	22.7
	Yes, reported by mother	51.6	54.8	65.0	55.9	73.3	55.2	47.7	68.1	64.6	64.7
Polio 2	No	19.3	10.5	9.7	21.9	27.4	16.8	32.1	25.0	36.2	17.9
	Yes, vaccination date on card	34.6	35.5	25.6	27.5	4.2	28.7	23.3	8.7	2.3	19.9
	Yes, reported by mother	45.1	53.5	64.4	50.4	68.2	54.5	44.5	66.1	61.2	61.7
Polio 3	No	25.8	15.2	14.1	29.7	33.3	22.6	36.7	31.0	43.1	24.7
	Yes, vaccination date on card	31.5	32.5	22.9	23.8	3.3	25.1	20.1	7.5	1.5	16.4
	Yes, reported by mother	41.5	51.9	62.8	45.9	63.2	52.3	42.6	61.3	54.9	57.5
Polio 0	No	17.4	20.7	35.9	21.7	44.9	21.4	39.2	42.9	76.3	54.3
	Yes, vaccination date on card	38.0	38.1	26.2	32.3	7.2	32.7	25.8	11.5	3.8	21.8
	Yes, reported by mother	43.7	40.2	37.0	45.6	47.5	45.0	34.7	45.4	19.8	23.6

Table II: Households having radio and polio vaccination in all regions of the country (PDHS 2012-13)

Polio vaccine doses received	Responses from households Having Radio	Regions & responses in % (N=1859)									
		Islamabad	Punjab		Sind		KPK		Balochistan		Gilgit Baltistan
			Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	
Polio 1	No	5.9	0.9	7.4	11.5	11.6	15.3	28.4	24.9	34.0	18.7
	Yes, vaccination date on card	37.5	39.3	27.3	26.4	3.9	28.7	22.7	15.6	4.2	17.8
	Yes, reported by mother	55.1	59.8	65.3	58.6	84.5	55.4	48.8	59.5	61.4	63.5
Polio 2	No	13.2	3.7	12.4	24.1	17.1	18.5	31.3	28.7	38.9	23.7
	Yes, vaccination date on card	34.6	36.4	23.1	20.7	3.1	27.4	21.8	13.8	3.2	16.0
	Yes, reported by mother	50.7	59.8	64.5	51.7	79.8	54.1	46.9	56.7	57.5	60.2
Polio 3	No	17.6	10.3	15.7	27.6	20.9	29.3	35.1	35.6	44.9	33.5
	Yes, vaccination date on card	33.1	31.8	22.3	19.5	3.1	24.2	19.4	9.7	2.8	13.4
	Yes, reported by mother	47.1	57.9	62.0	49.4	76.0	46.5	45.0	49.8	51.6	52.8
Polio 0	No	12.5	27.1	35.5	13.8	32.6	21.0	34.1	45.3	62.1	66.2
	Yes, vaccination date on card	38.2	35.5	27.3	27.6	4.7	30.6	25.6	16.6	3.5	18.1
	Yes, reported by mother	47.1	37.4	37.2	55.2	62.7	47.1	40.3	38.1	34.0	15.7

Television exposure in households and its impact on received polio vaccine doses

Table III shows polio vaccine doses received in households who had no television and table IV is about polio vaccine doses received in households who had television. These tables reveal that children from households having television had received markedly more polio vaccine doses (1,2,3,0), higher vaccination dates on cards and vaccination reported significantly more by mothers than children from households who had no television.

In rural area of Balochistan, 80.5% children in households without TV did not receive polio 0 dose and it showed the highest figure in the country.

Figure 1 and 2 show statistical significance and relationship of radio and TV with polio vaccine doses (1,2,3,0). The charts

Table III: Households having no TV and polio vaccination in all regions of the country (PDHS 2012-13)

Polio vaccine doses received	Responses of households Having NO Television	Regions & responses in % (N=4295)									
		Islamabad	Punjab		Sind		KPK		Balochistan		Gilgit Baltistan
			Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	
Polio 1	No	22.1	3.5	5.4	17.9	24.6	21.2	31.1	38.9	37.3	19.5
	Yes, vaccination date on card	36.5	33.3	24.5	15.9	3.0	28.0	21.6	3.4	2.1	16.1
	Yes, reported by mother	38.5	63.2	69.7	66.2	72.3	50.8	47.3	57.7	60.6	64.5
Polio 2	No	29.8	6.9	10.1	29.1	30.0	25.0	35.7	39.6	41.7	25.3
	Yes, vaccination date on card	37.5	31.9	20.7	13.9	1.6	24.6	19.9	3.4	1.9	14.1
	Yes, reported by mother	31.7	61.1	68.8	57.0	68.1	50.4	44.4	57.0	56.4	60.2
Polio 3	No	37.5	11.1	13.4	37.1	36.1	30.9	40.2	46.3	49.6	33.3
	Yes, vaccination date on card	35.6	30.6	18.7	8.6	1.1	20.8	16.9	1.3	1.4	11.4
	Yes, reported by mother	26.0	58.3	67.5	53.6	62.7	48.3	42.5	52.3	48.9	54.0
Polio 0	No	24.8	26.4	38.8	29.8	51.6	30.5	46.5	69.1	80.5	69.1
	Yes, vaccination date on card	38.1	32.6	22.0	17.9	4.6	29.7	21.3	3.4	3.0	16.1
	Yes, reported by mother	34.2	41.0	38.6	52.3	43.5	38.1	31.8	27.5	16.5	14.9

Table IV: Households having TV and polio vaccination in all regions of the country (PDHS 2012-13)

Polio vaccine doses received	Responses of households having Television	Regions & responses in %. (N=6228)									
		Islamabad	Punjab		Sind		Khyber Pakhtunkhwa		Baluchistan		Gilgit Baltistan
			Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	
Polio 1	No	8.1	5.7	6.5	11.7	11.9	10.2	18.5	19.2	26.4	9.6
	Yes, vaccination date on card	35.4	39.8	32.3	33.1	9.8	32.2	32.2	13.9	4.6	26.0
	Yes, reported by mother	54.9	54.1	61.2	54.5	78.1	57.4	49.1	66.7	68.4	64.2
Polio 2	No	15.9	10.3	9.7	20.9	20.1	13.3	24.8	23.3	29.7	14.6
	Yes, vaccination date on card	34.1	36.2	29.2	29.0	8.1	30.3	29.2	12.2	3.5	23.0
	Yes, reported by mother	48.9	53.1	60.9	49.5	71.8	56.4	45.8	64.1	65.9	62.2
Polio 3	No	21.7	15.5	14.9	28.3	25.1	20.7	29.4	29.5	34.3	22.0
	Yes, vaccination date on card	31.2	32.7	26.3	25.8	6.9	26.9	25.9	9.8	2.7	19.3
	Yes, reported by mother	45.7	51.5	58.9	45.0	67.8	52.4	43.7	58.3	61.9	57.9
Polio 0	No	14.8	20.5	33.5	19.6	30.2	16.8	23.2	37.8	58.6	47.6
	Yes, vaccination date on card	38.1	38.6	29.7	34.1	10.7	33.5	34.1	15.6	4.9	25.0
	Yes, reported by mother	46.2	39.9	35.8	45.4	58.4	49.1	42.5	46.4	36.0	27.0

clearly show that there is statistical significance and relationship of radio and television with polio vaccine doses (1,2,3,0). SPSS Multinomial Logistic Regression model was used for analyses.

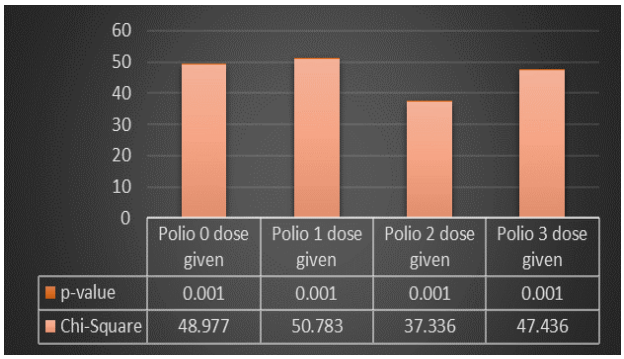

Figure 1: Households having radio association with polio vaccine doses (PDHS 2012-13)

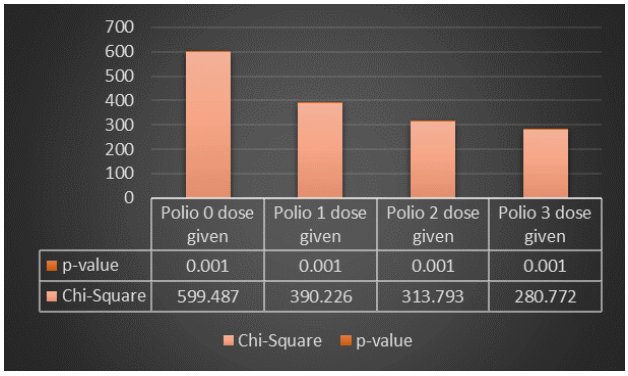

Figure 2: Households having TV and association of polio vaccine doses (PDHS 2012-13)

Discussion

This study shows that electronic media (radio and TV) exposure in households has an impact on polio vaccination. It shows that children received more polio vaccination doses in households who had radio and television. Children in households having TV had markedly high polio vaccine doses (1,2,3,0), vaccination marked on card and vaccination reported by mother in comparison to children from households who had no TV. Radio and TV have statistically significance and relationship with polio vaccine doses (0,1,2,3).

The current provisional results of 6th population and housing census 2017 show that Pakistan's population is 207, 774, 520 and annual growth rate (1998 to 2017) is 20 percent.[15] According to The World Bank estimation, its population will be 234,377,000 in 2027 and 32 per cent population will be under 14 years of age.[16] Population under 5 years of age in Pakistan needs special attention and measures for polio vaccination.

PDHS 2012-13 presumed that there are large number of children in Pakistan who did not get polio vaccine and they can get polio. Poor knowledge about polio vaccination and different barriers have put children's health at stake and there is need to reach every missed child for polio vaccination through high quality immunisation activities.[17] This is possible by national campaigns by use of electronic media (radio and TV) to save children from polio.

In PDHS 2012-13 some areas were not covered, and clusters were left partially completed due to security reasons. This

shows that polio vaccination teams cannot go at such places in Pakistan like Balochistan, so special measures by provincial and federal governments, with support of law enforcement agencies, are needed. Special strategies and efforts are necessary in such areas to control and prevent spread of WPV ([18]). Risk analysis, well managed polio vaccination plans and increased communication would be helpful to save children from polio ([19]).

Pakistan urban population is 38.8% while rural is 61.2% of total population (20) so rural areas need more attention for polio vaccination. Radio has importance in rural areas because people listen radio programmes and news bulletins while sitting together and during fields work also. Mass media has an important role in giving information and can be effectively used for information delivery for mass population.[21]

Our study results show that in rural areas of the country households having radio had higher polio unvaccinated children than urban areas households. Balochistan rural areas households, without radio and TV, have the highest polio unvaccinated children. Radio in rural areas is main information source, has an importance and could be beneficial for changing behaviour, attitudes of opinion leaders and family heads towards polio vaccination.

Our study shows that polio vaccination was not given to all children in all regions of the country. Parents can be motivated by health education. In rural areas in Pakistan, although education level is lower than urban areas but people living there can be educated by electronic media. The electronic media (radio and TV) is an important tool in minimizing immunisation disparities[22] and effective use of it can remove barriers and be helpful for control of polio and increase in polio vaccination. [23]

Our study shows that TV exposure in households markedly increased polio vaccination in children. It also created sense of responsibility to remember polio vaccination doses and get marked on vaccination cards also. As visual images influence health behaviours, increase knowledge and change attitude (24) so TV can be used for polio vaccination awareness because TV campaigns are cost effective than large community-based interventions or programmes to educate and create awareness among different communities.[25]

Health budget has pivot role to save people lives. Total expenditure of health budget of its GDP (2014) of Bangladesh was 2.8%, Bhutan spent 3.6%, Sri Lanka allocated 3.6%, Nepal had 5.8%, Maldives used up 13.7%, and ironically Pakistan only spent 2.6% (26). There is great need to increase health expenditure budget, so health department would be able to run polio vaccination awareness programmes on electronic media. Children vaccination programmes are highly beneficial and have long term benefits for children as vaccinations can protect them for life from vaccination preventable diseases.[27]

This study results show that polio vaccinated (Polio1,2,3,0) children were higher in households who were exposed to TV and Radio so for higher polio vaccination coverage there is need of accurate vaccine coverage estimate at different levels[28], developing correct information/data base to monitor, monitoring of unvaccinated children[29] and also developing community-based education programmes through audio or video information or messages.

Our study shows that electronic media exposure has an impact on increase in polio vaccination, and by using it vaccination coverage can be increased to make polio free Pakistan. A study in Pakistan also showed electronic media impact on polio vaccination. It revealed that when people with very low education level were given proper information about vaccination, it enhanced 39% in vaccination rate in children.[30]

Electronic media (radio &TV) can significantly improve polio vaccination coverage in the country. It needs high quality radio and TV advertisements at proper time for creating awareness about polio, improving knowledge about disease effects, decreasing fear and educating communities for polio vaccination.

Although sample size of the PDHS 2012-13 was small but it gave the required information of electronic media influence on polio vaccination.

Conclusion

Electronic media, TV and radio, has an important role in polio vaccination and can play vital role in polio eradication in Pakistan. Proper designing and delivery of powerful media messages at proper time can create awareness about polio, change behaviour and attitude for polio vaccination.

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