URL: http://dx.doi.org/10.31703/ger.2021(VI-I).01 **DOI:** 10.31703/ger.2021(VI-I).01
p-ISSN: 2521-2974 **e-ISSN:** 2707-0093 **L-ISSN:** 2521-2974
Citation: Adnan, M., Sultana, I., & Iftikhar, I. (2021). Parents Perception Regarding Immunization of Two Years Old Children: An Analysis of EPI Communication Campaign in Pakistan. *Global Economics Review*, *VI*(I), 1-10. https://doi.org/10.31703/ger.2021(VI-I).01

Parents Perception Regarding Immunization of Two Years Old Children: An Analysis of EPI Communication Campaign in Pakistan

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Abstract *This research study aimed to explore the parents' perceptions and knowledge with reference to child immunization under the expanded program of immunization. A sample of 200 couples was taken from different provinces of Pakistan, including Punjab, Sindh, Baluchistan and KPK, by utilizing the convenient sampling technique. The findings of the study indicated that the young couples had more knowledge about the covered diseases, schedule of immunization and expanded the program of immunization. Mothers were having good knowledge of EPI, and their mean knowledge was greater than their counterparts. Similarly, employed and urbanized couples had also significant knowledge about the expanded program of immunization and its covered diseases. Television, radio and the internet were the leading and effective sources of information regarding EPI and its covered diseases. Furthermore, access to immunization centers, migration, absence or unavailability of vaccination staff and post-immunization fever were the chief reasons for incomplete immunization.*

Pages: 1 – 10
Vol. VI, **No.** I (Winter 2021)
Key Words: Immunization; Parents Perception; EPI Communication Campaign; EPI Knowledge
JEL Classification:

Introduction

According to a population-based survey conducted in Pakistan revealed that immunization coverage in the country is very low. The results indicated that it was nor more than 54% around the country (Government of Pakistan, 2014). A lot of studies revealed the challenges, obstacles and problems and other administrative issues relating to program implementation in Pakistan. Even still, there is a need to revisit and review the program and its implantation procedures in order to understand the barriers in the health system in Pakistan. Moreover, to make it better and improved with regard to its service delivery, it is important to take into account all possible measures and factors influencing its development and implementation (World Health Organization, 2018). The expanded program of immunization was launched in 1978 by introducing all required antigens gradually for child immunization program. Rotavirus is recently added to the expanded program of immunization, too (Government of

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Pakistan, 2018). Despite having a cost-effective expanded program of immunization with better health strategies, millions of children remain un-immunized during the series of vaccination programs organized in the routine schedule. A great number of children have been reported especially, in the low-middle income and middle-income countries of the world (Adre, Booy, Bock, Clemens, Datta, John, & Schmitt, 2008; Angelillo, Ricciardi, Rossi, Pantisano, Langiano, & Pavia, 2012).

According to the UNICEF report, 50% of deaths were reported due to pneumonia, meningitis diarrhoea in Pakistan due to lack of immunization (UNICEF, 2015). The postneonatal immunization can be them from deaths if they get an immunization. According to WHO fact sheet regarding immunization coverage in Pakistan, it has revealed that only 54% of children of 12-23 months are getting immunization through the county since the program inception, while it is strongly recommended by WHO that to maximize the coverage up to 90% at the national level and 80% in every district of Pakistan (Wimmer & Dominick, 2010). National Survey conducted during 2014-2015 also revealed a significant difference in immunization ratio in children of rural and urban livelihood. The results indicated that 56% of rural and 70% of urban children are reported to be fully immunized. Similarly, this disparity has also been reported at the provincial level in Pakistan that demonstrated that urban and rural difference in Sindh was 62:33% respectively, Baluchistan 48:20%, KPK. 74:54% and 75:65% in Punjab, respectively. Baluchistan has reported as the most deprived region with regard to immunization of children, while Punjab with the highest rate of immunization (National Economic Survey of Pakistan, 2013-2014). The expanded program on immunization of Pakistan is a program to provide vaccination to the children of age 12-23 months against 10 targeted diseases including Poliomyelitis, Neonatal Tetanus, Measles, Diphtheria, Diarrhea, Pertussis (Whooping Cough), Hepatitis-B, Meningitis, Childhood Tuberculosis and Pneumonia. These diseases are causing millions of ailments, deaths and disabilities each year. EPI program is aiming to reduce mortality and disabilities through immunization of the children of the targeted age groups (World Health Organization, 2018).

Lim and Rashwan (2003), in survey research, found that Hepatitis vaccination exposure among the rural divide. Most of the research subjects from different towns, regions were of 12 years age group—the sample of the study comprised of urban, rural, undergraduates and graduate health care workers. A pre-constructed questionnaire was used for data collection, and the findings indicated that most of the respondents were having less knowledge about immunization against hepatitis with the little exposure. Similarly, the insurance policy coverage rate was higher among health workers as compared to other individuals. The researchers suggested sensitization efforts should be made regularly to aware the people about the importance of immunization. Moreover, it was also recommended that immunization should be strategized at regular intervals to reduce the risk of getting the serious disease of hepatitis. Wallace, McNally, and Richmond (2007) studied the population of targeted groups of individuals with regard to the provision of free immunization. The findings revealed that the high risks groups were more likely to share less knowledge about the immunization and its supply in their respective areas. They also recommended health orientation programs for preventive measures and to maximize the awareness level. Even it was also recommended that immunization program only for children is not enough to fight against the deadly disease like hepatitis B & C as vaccination should be ensured to all age groups equally. McPhee,

Nguyen, Euler, Mock, Wong, Lam, and Buu, (2003) investigated the impact of vaccination and immunization campaign in Taxes areas of two years based promotion of immunization using radio, news reports, and articles in the Vietnamese language. For this purpose, data were collected from the teachers, doctors, pharmacists, dentists by utilizing the community mobilization technique while the city of Washington was used as a control site were no such interventions took place. It was found that all those individuals who worked closely with the experts and doctors were likely to share detailed knowledge about immunization as compared to those where there no intervention made. Snyder (2017) presented a critical review of the research studies regarding the evaluation of communication campaigns regarding health issues on various health problems. He experienced a maximum impact of these campaigns with a five fractions point; for example, seat belt promotion campaigns were 15%, and alcohol consumption lowering was 11%, while dental care was 13% effective. He reviewed 600 types of research and concluded that alcohol and drug lowering campaigns were less effective, which were found only 1-2% effectiveness. Similarly, consistency in the message for the health communication, accessibility and utilization of media for the campaign material dissemination and audience were the leading variables influencing the effects of campaigns.

This research study aimed to investigate and measure the parental perceptions toward the expanded program of immunization in Pakistan among all ethnic groups of Pakistan, including all provinces of the country. The foremost objective is to measure the knowledge about the diseases and its immunization, sources of knowledge and reasons for not vaccinating their children with special reference to the communication campaign of Expanded Program of Immunization in Pakistan. The present study is also focusing on the knowledge of the diseases as listed in the expanded program of immunization in Pakistan. The study is also focusing on the rural areas of Pakistan in different provinces where access to health care facilities is limited, but vaccination teams, as per schedule, visit those areas for immunization of the children under EPI.

Material and Method

This research study aimed to explore the parents' perceptions of their two years old child with reference to their immunization under the expanded program of immunization in Pakistan. For this purpose, a sample of 200 couples was taken from the population by utilizing the convenient sampling technique of non-probability sampling. The couples were selected from all major cities of all provinces to make the sample true representative of the population. The sampling probability was designed by keeping in mind the strength of the population in each province and city of the respective province of Pakistan. All the provinces sharing what percentage of the total population of Pakistan was taken into account while drawing probability of sampling, the table is given below represents the population statistics of Pakistan which were obtained from the official website of Pakistan Bureau of Statistics according to recent census 2017.

Table 1. The population of Pakistan (2017)

Province	Population	Share of Pakistan's Population	Sample Size	Sampling City
Punjab	110,012,442	53%	106(Couples)	Lahore
Sindh	47,886,051	24%	48(Couples)	Karachi

Province	Population	Share of Pakistan's Population	Sample Size	Sampling City
Baluchistan	12,344,408	7%	14(Couples)	Quetta
KPK	30,523,371	14%	32(Couples)	Peshawar

Source: *Bureau of Statistics*

After drawing the sample, a pre-constructed questionnaire comprising closed-ended questions was used to measure responses. All the responses were coded into an excel sheet, and SPSS 21 version was used for the purpose of data analysis. The findings are presented in the forms of tables with statistical applications of Independent t-test and one way ANOVA to test the hypotheses.

Data Analysis and Interpretation of Results

Table 2. Socio-Demographic Features of the Couples (Respondents) in Pakistan

Variables	Number	Percentage
Age Group	-	-
18-30 years	217	54 %
31-40 years	113	29 %
41-50 years	32	8 %
51-60 years	21	5 %
More than 60 years	17	4 %
Ethnic Province	-	-
Punjab	212	53 %
Sindh	96	24 %
Baluchistan	28	7 %
Khyber Pakhtunkhwa	64	16 %
Gender	-	-
Male	200	50 %
Female	200	50 %
Employment Status	-	-
Employed	237	59 %
Unemployed	67	17 %
Housewife	96	24 %
Educational Qualification	-	-
Illiterate	51	13 %
Primary or Matriculation	201	50 %
Intermediate	73	18 %
Graduate	50	13 %
Postgraduate or higher	25	6 %
No. of Children	-	-
No children	98	24 %
1-2	193	48 %
3-5	79	20 %
6 or more	30	8 %
Background	-	-
Urban	232	58 %
Rural	168	42 %

The above table indicates about the demographic characteristics of the respondents/couples living in different provinces of Pakistan. It can be seen that most of the respondents, 54% were between the age group of 18-30 years, while the second major age group was 31-40. Only 4% of individuals were aged more than 60 years. Similarly, 53% of the sample was from Punjab province, 24% from Sindh, 16% from KPK, while 7% from Baluchistan. The male and female ratio was 50%, as the sample was comprised of 100 married couples. Regarding the employment status, almost most of the couples, 59% were employed, 17% unemployed, while 24% were housewives. The educational qualification of the 50% of respondents was primary-matriculation, while only 6% reported having postgraduate digress. 13% were illiterate and cannot read and write, 18% were having intermediate qualification, while 13% were graduated. Regarding the number of children, most 48% of the couples have 1-2 children while 24% had no children. On the other hand, respondents having 3-5 children were 20%, while only 8% have more than six children. Similarly, 58% belonged to urban areas, while 42% were living in rural areas.

Table 3. Knowledge of Expanded Program of Immunization and Covered Diseases

Variables	Mean Knowledge+ Standard Deviation	*n*	Test value with DF	Significance/ P-Value
Age Group	-	-		
18-30 years	8.32 ±1.20	217		P-Value=0.000
31-40 years	6.64±0.98	113	ANOVA	
41-50 years	5.43±1.44	32	F=93.44,	
51-60 years	6.22±2.42	21	DF=14	
More than 60 years	7.56±2.64	17		
Ethnicity	-	-		
Punjabi	8.54±0.43	212		
Sindhi	5.44±2.11	96	ANOVA	P-Value=0.019
Baluchistan	4.03±2.56	28	F=13.88, DF=11	
Khyber Pakhtunkhwa	6.02±2.33	64		
Gender	-	-	T-test	
Male	7.98±1.99	200	T-Value	P-Value=0.000
Female	9.12±0.63	200	= -8.13 DF = 238	
Employment Status	-	-		
Employed	9.66±1.88	237	ANOVA	
Unemployed	6.21±2.44	67	F=8.47,	P-Value=0.010
Housewife	8.36±1.22	96	DF=7	
Education	-	-		
Illiterate	4.33±2.20	51	ANOVA F=4.39, DF=17	P-Value=0.000
Primary or Matric	4.74±1.32	201		
Intermediate	5.69±1.56	73		
Graduate	7±.99	50		
Postgraduate or higher	9.88±1.07	25		

Variables	Mean Knowledge+ Standard Deviation	*n*	Test value with DF	Significance/ P-Value
No. of Children		-		
No children	7.94±1.35	98	ANOVA F=3.43, DF=9	P-Value=0.020
1-2	5.44±0.88	193		
3-5	4.99±1.23	79		
6 or more	4.88±1.69	30		
Background		-		
Urban	8.66±1.44	232	T-Value=29.39 DF=375	P-Value=0.000
Rural	4.56±1.33	168		

N=400 (200 couples)

The above table shows the results of the mean knowledge score of the couples regarding the expanded program of immunization in Pakistan and its covered diseases under this program with special reference to communication and media campaign. The results presented in the table clearly indicate the significant difference among different age groups of the respondents regarding the knowledge and EPI and its covered diseases. The age groups 18-30 were more likely to have good knowledge score with a mean of 8.31 with 1.20 standard deviation. It can be safely said that this difference was significant as compared to other age grou0.00ps as indicated by the ANOVA test of statistical significance where F=93.44, df=14 while P-value=0.000<0.05. With regard to ethnicity, there was also a significant difference among the ethnic groups as well. All ethnic groups were significantly different from each other in terms of mean knowledge with standard deviation. The respondents from Punjab province were more likely to share good knowledge as compared to other provinces. The residents of Baluchistan/Quetta were having significantly less and poor knowledge regarding the EPI and its diseases with reference to child immunization. Gender was also a contributing variable determining the knowledge about EPI as the table results vividly communicate that the females had more knowledge as compared to male respondents. The T-test indicates a significant difference in the mean knowledge score among them. Similarly, the employment status was also creating a significant difference in terms of knowledge as the mean score of the employed and housewives were greater than the unemployed couples in Pakistan, as indicated by the ANOVA test of statistical significance. Education qualification of the respondents/couples also indicated a significant difference in knowledge regarding EPI and about the diseases knowledge. It can be easily comprehended from the table data that with the improved level of qualification, the knowledge score was also increased. The couples having no education or less education were having a significantly poor mean score of 4.33±2.20 & 5.69±1.56, which was significantly less than the mean knowledge of graduate and post-graduate degrees qualified couples. The couples have no children were significantly sharing more knowledge mean score as compared to those having children, and this difference was significant in accordance with the ANOVA test of statistical analysis. Background of the couples was also contributing towards the increased mean score in the knowledge of the couples. It can be safely said that couples living in urban areas were having more knowledge as compared to their counterparts living in remote areas of Pakistan.

Table 4. Reasons for Incomplete Immunization

Questions (Awareness of EPI)	Frequency	Percentage (%)
Vaccination centres were not accessible	88	29 %
Migrated from the previous residence	63	21 %
Vaccination staff was absent	43	14 %
It is painful for children, and they got a fever	33	11 %
The vaccine was not available at the center	39	13 %
Immunization is not necessary as it is communicated	36	12 %

The above table shows the responses of the couples regarding the reasons for incomplete immunization of their children or not being able for at all. The top-ranked reason was being not able to access the centers for child immunization under the expanded program of immunization among most 29% of the respondents. Migration of the respondents was another dominant reason for incomplete immunization of the children among 21% of respondents. 14% reported that they went for immunization, but the staff was not available, 11% revealed that their children get fever and vaccination/immunization is painful, 13% told that vaccine was not available at the centers when they visit the centers for their children immunization under EPI while 12% were of the view that immunization is not necessary as it is communicated and their children are healthy, and they don't need any immunization against any disease.

Table 5. Sources of knowledge about Expanded Program of Immunization among Parents

Source/Channel	Frequency	Percentage
Radio	53	13 %
TV	167	42 %
Posters	16	4 %
Pamphlets	12	3 %
Peers	23	6 %
Internet	77	19 %
Research Articles	5	1 %
Newspapers/Magazines	9	2 %
Seminars	4	1 %
Workshops	7	2 %
Conferences	4	1 %
Health Experts/Medical Clinics	23	6 %

The above table communicates about the sources of knowledge among the couple living in different provinces of Pakistan with regard to the Expanded Program of Immunization in Pakistan and its communication and media campaign. The results indicated that television was the dominant source of information among most, 42% of the respondents followed by radio and internet sources. 6% of the respondents revealed that they got information from peers and health experts at medical clinics regarding immunization of children under EPI. Only a few respondents/less number of respondents revealed that they got information from posters, research articles, newspaper/magazines, workshop/conferences and seminars. It can be safely concluded

that electronic media and internet were the effective sources in transmitting the knowledge about the expanded program of immunization and its covered diseases as compared to other interpersonal communication channels and print media as well.

Discussion

This study aimed to measure the perception and knowledge of the couples in Pakistan with regard to the expanded program of immunization and the 10 diseases covered in this program in the country. The expanded program of immunization is Pakistan is funded by UNICEF with collocations of the World Health Organization. This program of immunization was established under the guidelines laid by WHO with regard to the provision of free immunization to children against 10 serious diseases. Pakistan is a developing county, and its most of the population fraction is directly or indirectly linked with agriculture. The health care facilities are limited, and a significant proportion of the population is a marginalized lifestyle with limited resources and income. A total of 200 couples (400 respondents) from all provinces of Pakistan were taken as study's sample according to the population strength keeping in mind the latest statistics of Pakistan Bureau of Statistics. A pre-constructed questionnaire comprising closed-ended questions and few with multiple choices based on the perception and knowledge about the expanded program of immunization, covered diseases, schedule of immunization and reasons of incomplete immunization. The questionnaire was also translated into Urdu for the convenience of the respondents. Most of the respondents belonged to the province of Punjab as Punjab shares 60% of the population in Pakistan. The gender ratio was almost equal in the sample as a couple was chosen in the sample. Similarly, most of the couples were young aged between 18-30 years of age group. The findings of the study indicated that the young couples had more knowledge about the covered diseases, schedule of immunization and expanded the program of immunization.

The statistical analysis of ANOVA application proved this hypothesis, and there was a significant difference in the mean score of the knowledge among different age groups of Pakistan couples. Regarding the knowledge score above 8, scores were considered higher, 5-7 average, while below 5 was considered poor knowledge score on 10 items. Similarly, individuals with higher age groups were also scored above average, but they were less in number. It is because they were experienced and decision-makers of their families. It was also revealed that couples living in Punjab were significantly well informed about EPI and its covered diseases as compared to the couples of other provinces. The couples from Baluchistan/Quetta had poor knowledge, less than four as a mean score. It could be due to less health care facilities and access to medical centers where they could visit for their children immunization. Another prevailing factor was their economic status; as most of the couples' form, Quetta belonged to remote areas of the province. Females were more likely to have great knowledge with a mean of 9.12±0.63, which was greater than that of male respondents. Similarly, the urban respondents, employed couples, were above average in knowledge. Qualification of the respondents was significantly contributing towards higher knowledge about EPI and its covered diseases, while the illiterate or less qualified couples revealed poor knowledge, which was an alarming situation for not having sufficient knowledge of immunization. It was maybe due to their belonging to the rural and remote areas where campaign messages did not prove to be effective. Electronic media (TV, Radio) and internet found the most effective sources in disseminating information about the expanded program of

immunization. Among the major factors responsible for incomplete immunization of the children among the studied couples, access to immunization centers, migration, unavailability/absence of vaccination staff and post-immunization fever among children were the leading reasons. Some of the respondents also reported that their children event don't need any immunization against any disease as they are healthy, and being the parent, they also did not get any vaccination in childhood. This is because of a lack of knowledge about the importance of immunization and other preventive strategies to avoid serious illnesses caused by serious diseases.

Conclusion

Research studies Torun and Bakirici, (2006), Owais, Hanif, Siddiqui, Agha, and Zaidi, (2011) and Nisar, Mirza, and Qadri, (2010) revealed the similar results that in the remote areas of the country, parents had less knowledge about the diseases and the advantages of child immunization. Moreover, a great number of children are not immunized or partially immunized as revealed in this study. Pakistan is a country where a baby boy is more valued than a girl this can be the reason for incomplete immunization of the two years babies. This research study is going to endorse the above-mentioned research studies. It is strongly recommended to reevaluate the communication and media campaign by focusing on the grey and neglected areas where messages did not prove to be effective.

Limitation

This research study's sample was limited up to 200 couples only due to time and budget constraints. It can be studied more dexterously by enlarging the sample size by utilizing probability sampling technique of random sample as this research employed a convenient sampling technique. Furthermore, examining minutely the reasons for incomplete immunization of the children, other stakeholders like medical experts, vaccination staff and health workers could be included in the sample for more reliable results.

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