

Group influence on attitudes towards polio vaccination in Pakistan: Role of group identification and perceived group support for polio vaccines

Warda Saleh, Humaira Jami

Abstract

Objective: To study the moderating role of perceived group normative support on the effect of group identification on scepticism and advocacy domains of attitude towards polio vaccination.

Method: The cross-sectional analytical study was conducted at the National Institute of Psychology, Quaid-i-Azam University, Islamabad, Pakistan, in June 2020, and comprised adult residents of Pakistan who were approached through online platform Psytoolkit. Data was collected by means of Attitude towards Polio Vaccination Scale, Group Identification Scale, and a measure of Perceived Group Normative Support for Polio Vaccination. Data was analysed using SPSS 21.

Results: Of the 310 participants, 69(22.3%) were men and 240(77.4%) were women. The overall mean age was 25.62±8.47 years (range: 18-72 years). Further, 242(78.1%) participants were single and 62 (19.7%) were married, 166(53.45%) were from Punjab, 80(25.8%) from the federally-administered tribal areas, 26(8.3%) from Khyber Pakhtunkhwa, 7(2.2%) from Sindh and 7(1.93%) from Balochistan. Group identification significantly increased advocacy ($p<0.001$). Perceived group normative support for polio vaccination also increased advocacy ($p < 0.01$) and was associated with a decrease in scepticism ($p< 0.001$). Group identification interacted with perceived group normative support for polio vaccination to increase advocacy of polio vaccination ($p<0.05$).

Conclusion: Group identity was found to influence attitudes towards polio vaccination in Pakistan by increasing the persuasive impact of perceived group normative support for polio vaccination.

Keywords: Polio vaccines, Attitude towards vaccination, Group identification, Group norms. (JPMA 72: 802; 2022)

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Introduction

Polio is a viral disease of children which can only be prevented through vaccination since it has no cure.¹ Fortunately, the administration of oral live-attenuated poliovirus vaccine through the Global Polio Eradication Initiative (GPEI) has resulted in the elimination of polio from most countries of the world, with 80% of the world's population living in certified polio-free regions.¹ However, polio still remains endemic in Pakistan and Afghanistan as these countries are struggling with the circulation of wild poliovirus type 1.² Pakistan, more notably, reported the highest cases of polio globally in 2020.³

Significant barriers responsible for the persistence of polio in Pakistan are vaccine hesitancy and refusal by parents.⁴ These refusals reflect misinformed beliefs and negative attitude towards polio vaccines, which also manifests in the form of hostility and violent attacks on polio workers.⁵ Such serious implications associated with these attitudes necessitate their amelioration. This endeavour, however, can only begin after gaining adequate understanding

about the nature of these attitudes.

Religious, geopolitical, and demographic concerns, reflecting threats to group identities, are the most commonly cited barriers to increasing polio vaccination rates in the literature available thus far.⁶ For example, polio vaccine refusals are common among individuals citing religious reasons⁷ and individuals belonging to certain ethnic groups, like Pakhtuns,⁸ therefore, affiliation with religious or ethnic groups seems to be associated with vaccine decision-making.

The concept of group identification (GI) has been derived from social identity theory,⁹ according to which groups help in defining self-concept of people and provide them with an identity. Group identification or the intrinsic desire to fit into a group makes people conform to expected standards or norms of that group, which are acceptable beliefs held by people of a group that maybe actual or perceived.¹⁰ Group norms are influential in the context of vaccination because research suggests that strong group norms which are supportive of vaccination reduce hesitancy and increase vaccine intentions in case of flu¹¹ and coronavirus disease-2019 (COVID-19) vaccines.¹² How this link operates in context of polio vaccines needs to be explored.

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National Institute of Psychology, Quaid-i-Azam University, Islamabad, Pakistan.

Correspondence: Warda Saleh. Email: warda154saleh@gmail.com

Attitudes towards polio vaccination might be affected since GI persuades people to adopt attitudes similar to their group norms¹³ which need to be assessed.

According to a comprehensive meta-analysis of polio vaccination studies in Pakistan, there is an absence of cross-sectional studies analysing the association of polio attitudes with their psychological causes.⁶ The present study was planned to assess psychological correlation of polio vaccination attitudes and to test the causal mechanism underlying these attitudes.

Subjects and Methods

The cross-sectional analytical study was conducted at the National Institute of Psychology, Quaid-i-Azam University, Islamabad, Pakistan, in June 2020. After approval from the institutional ethics review board, the sample size limit was determined by G-Power calculator¹⁴ using two-tailed test, effect size 'r' 0.3, alpha error probability 0.05 and power 1-beta error probability 0.95. Those included were Pakistani residents aged >18 years with minimum education level of 12 years. Data was collected through an online survey using Psytoolkit.^{15,16}

A detailed informed consent listing purpose of the survey, eligibility criteria for participation and instructions was provided on the welcome screen. Furthermore, the benefits of participation, voluntary nature of participation, rights of confidentiality, and rights of data protection were also conveyed. Finally, the participants were also provided the option to view a detailed score-sheet including automatically calculated scores on all variables and their meanings.

Convenient sampling method was used and an online link was shared with a total of 543 participants through email and Whatsapp. The final sample size was 310 consisting of data from participants who fully completed the survey.

A total of three measures were utilised to collect data. To determine attitudes towards polio vaccination, a 22-item measure constructed by the authors¹⁷ was utilised. The scale was scored on a six-point scale with following response options: 1= strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = slightly agree, 5 = agree, and 6 = strongly agree. There were two subscales: Scepticism containing 14 items and Advocacy containing 8 items. High scores on Scepticism subscale ($\alpha=0.91$) indicated doubts about the safety of polio vaccines, concern about their harmful effects, and belief in conspiracy theories about polio vaccines.¹⁷ High scores on Advocacy subscale ($\alpha=0.82$) indicated belief in the effectiveness of polio vaccines and support for the vaccination campaign.¹⁷ For GI, a seven-item scale ($\alpha=0.91$)¹⁸ was used. It measured

participant's feelings of identification, commitment, liking, favourability, belongingness, fitting-in and group importance for sense of self on a 9-point scale ranging from 1 = not very much to 9 = very much. Higher scores indicated the strength of participants' GI with their group of choice. Finally, the measure for perceived group normative support (PGNS) for polio vaccination was inspired by the measure of descriptive norm about flu vaccination.¹¹ The question was, "Based on your assumptions, what is the percentage of your fellow group members supporting polio vaccination?", and it was to be scored from among the five options: 0%, 25%, 50%, 75% and 100%. The referent group was selected by prompting the participants to choose from a range of options a group most important to their personal identity. High score on this question indicated that participants perceived majority of their fellow group members to be supportive of polio vaccines, or, in other words, they perceive their group norm about polio to be positive. Attitude Towards Polio Vaccination Scale (ATPVS) and Group Identification Scale (GIS) were pre-tested for evaluating their psychometric properties on a sample of 310 adults at Quaid-i-Azam University, Islamabad, from January to February 2020.¹⁷ As for the measure of PGNS for Polio Vaccination, four experts were requested to review it for the present study.

Data was analysed using SPSS 21. Descriptive statistics and Cronbach alpha reliability coefficients for all the measures were worked out. For relationship among study variables, Pearson Product Moment Correlation was computed. Hierarchical linear regression through Process Macro was done to test the linear effect of predictors on outcome and hypothesised moderating effect. $P<0.05$ was considered statistically significant. The effect size of all Pearson correlations was small as per conventions.¹⁹

Results

Of the 310 participants, 69(22.3%) were men and 240(77.4%) were women. The overall mean age was 25.62 ± 8.47 years (range: 18-72 years). Further, 242(78.1%) participants were single and 62 (19.7%) were married, 166(53.45%) were from Punjab, 80(25.8%) from the federally-administered tribal areas (FATA), 26(8.3%) from Khyber Pakhtunkhwa (KP), 7(2.2%) from Sindh and 7(1.93%) from Balochistan.

Descriptive statistics, alpha reliability, normality statistics and Pearson correlations of the tools utilised in the study were tested (Table-1). Scepticism was negatively associated with advocacy ($p<0.01$) and PGNS ($p<0.01$). Advocacy was positively associated with GI ($p<0.01$) and PGNS ($p<0.01$). The relationship between GI and PGNS

Table-1: Correlation matrix among scepticism and advocacy domains of attitude towards polio vaccination, group identification, and perceived group normative support (N = 310).

	Reliability α	Descriptives		Normality Analysis		Pearson Correlation			
		M	SD	S	K	1	2	3	4
1. SKE	.91	39.36	14.44	.62	.15	-	-.39**	-.10	-.32**
2. ADV	.82	40.33	6.38	-1.33	2.38	-	-	.27**	.20**
3. GI	.95	50.13	13.41	-1.33	1.31	-	-	-	.19**
4. PGNS	-	3.94	.89	-.86	.91	-	-	-	-

M: Mean, SD: Standard deviation, S: Skewness, K: Kurtosis, SKE: Scepticism, ADV: Advocacy, GI: Group identification, PGNS: Perceived group normative support.

* $p < .05$. ** $p < .01$.

Table-2: Hierarchical regression analysis showing group identification, perceived group normative support, and their interaction term as predictors of scepticism and advocacy components of attitude towards polio vaccination. (N = 310).

Predictors	Scepticism						Advocacy					
	Step 1 β	SE	Step 2 β	SE	Step 3 β	SE	Step 1 β	SE	Step 2 β	SE	Step 3 β	SE
GI	-.10	.06	-.04	.06	-.03	.06	.28***	.03	.24***	.02	.26***	.03
PGNS			-5.71***	.90	-.31***	.91			.16**	.40	.18**	.40
GIXPGNS					.01	.68					.74*	.30
R ²	.01		.11		.11		.08		.10		.12	
ΔR^2	.01		.10		.00		.08		.02		.02	
F	3.21		18.09***		12.03***		25.24***		17.11***		13.63***	
ΔF	3.21		32.64***		.03		25.24***		8.38**		6.09*	

*** $p < .001$, ** $p < .01$.

GI: Group identification, PGNS: Perceived group normative support, GIXPGNS: Interaction term for group identification and perceived group normative support, SE: Standard error.

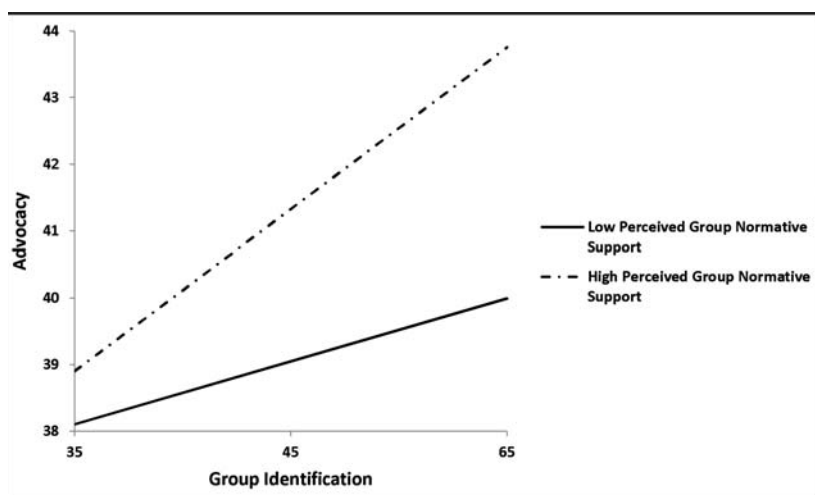
One unit increase in GI having one unit increase in scepticism.

One unit increase in PGNS having one unit increase in scepticism.

was also positive ($p < 0.01$).

Hierarchical linear regression with GI, PGNS, and their interaction term as the predictors of scepticism and advocacy of polio vaccination was done. For scepticism, GI was added in Step 1 and its linear effect was non-significant. In Step 2, PGNS was added and it caused significant decrease in scepticism ($p < 0.001$) by

accounting for 10% of variance. In Step 3, interaction term of the two predictors was non-significant ($p > 0.05$). For advocacy, GI in Step 1 predicted increase in advocacy ($p < 0.001$) and accounted for 8% variance. PGNS in Step 2 also predicted increase in advocacy ($p < 0.01$) and accounted for 2% variance. Interaction term of these two predictors in Step 3 significantly predicted increase in advocacy ($p < 0.05$) and accounted for 2% variance (Table-2).

**Figure:** Interaction effect of perceived group normative support (PGNS) for polio vaccination with group identification (GI) on advocacy for polio vaccination.

GI led to a more prominent increase in advocacy of polio vaccination under high levels of PGNS as compared to low levels of PGNS (Figure). Thus, PGNS moderated the relationship between GI and advocacy of polio vaccination.

Discussion

The present study found that increase in GI was related with positive attitude towards polio vaccination. This is because the GI phenomenon enhances group-member's willingness to engage in actions that benefit their group's welfare.²⁰ This concern for social welfare also encompasses vaccine decision-making.²¹ Increase in PGNS for

polio vaccination leads to an increase in advocacy of polio vaccination and a decrease in scepticism towards polio vaccination because societal norms and collective values affect one's attitudes about vaccination.²² For example, supportive group norms predict increase in vaccine intention and acceptance.^{11,12} The main finding of the present study is that PGNS interacted with GI to positively affect advocacy of polio vaccination. This is in line with the assumption that GI influences attitudes by means of group norms²³ because the desire to identify with one's groups makes one conform to the expected standard of that said group¹⁰ even in the case of health-promoting behaviour.¹³

The influential role of group norms in the context of vaccination holds important implications for mobilising community as a whole to promote vaccine acceptance. Vaccination can be promoted by appealing to consensus and unity of norms.²⁴ Furthermore, since GI is what promotes aligning of attitudes with group norms,²³ so promoting identification with groups that support polio vaccination can lead to the internalisation of these positive norms. For example, religion matters in polio refusals⁶, so doubts about polio vaccines can be effectively assuaged with the help of figures from a religious group.

The current study has certain limitations. Diversity of sample is an issue despite aiming for a more heterogeneous sample of all Pakistani adults. Specifically, there was an over-representation of people from Punjab. Researchers suggest that most Punjabis hold positive views about polio vaccination,²⁵ an assertion also confirmed by the high kurtosis score obtained for the Advocacy subscale of ATPVS.¹⁷ Regions, such as erstwhile FATA and KP where vaccines refusals and hostile attitudes towards polio workers are common,⁵ were under-represented. Constraints in sampling were set by the inclusion criteria of literacy and fluency in English. Random sampling of individuals can be taken up in future studies by utilizing diverse methods of data collection. Future researches can also undertake translation of ATPVS so its validity on diverse samples can be determined. Use of ATPVS in diverse samples will also be beneficial in studying the different causal mechanisms operating behind such attitudes.

Another limitation relating to the measurement of PGNS might have influenced the findings. PGNS might have a different effect than actual group norms because the participants may be projecting their own beliefs onto the group instead of the other way round. Therefore, future studies should try to manipulate actual normative support for polio vaccination.

This research points towards the benefits of group influence in promoting support for vaccination. Furthermore, the insight gained can help in identifying individuals and contexts that increase susceptibility to anti-polio vaccination propaganda. In the long run, more individualised campaigns can be designed and implemented that can help in achieving complete eradication of polio from Pakistan.

Conclusion

GI could influence attitudes towards polio vaccination in Pakistan. GI leads one's attitudes to align with one's perception of group norms as represented by PGNS for polio vaccination.

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References

1. World Health Organization. Poliomyelitis. [Online] 2019 [Cited 2020 Sept 1]. Available from: URL: <https://who.int/en/news-room/fact-sheets/detail/poliomyelitis>
2. The Global Polio Eradication Initiative. Endemic countries. [Online] 2020 [Cited 2020 Sept 1]. Available from: URL: <https://polioeradication.org/where-we-work/polio-endemic-countries/>
3. The Global Polio Eradication Initiative. Outbreak Countries. [Online] 2020 [Cited 2020 Sept 1]. Available from: URL: <https://polioeradication.org/where-we-work/pakistan/>
4. Ittefaq M, Baines A, Abwao M, Shah SFA, Ramzan T. "Does Pakistan still have polio cases?": Exploring discussions on polio and polio vaccine in online news comments in Pakistan. *Vaccine* 2021; 39: 480-6.
5. Verma AA, Jimenez MP, Tangermann RH, Subramanian SV, Razak F. Insecurity, polio vaccination rates, and polio incidence in northwest Pakistan. *Proc Natl Acad Sci U S A* 2018; 115: 1593-8.
6. Ataullahjan A, Ahsan H, Soofi S, Habib MA, Bhutta ZA. Eradicating Polio in Pakistan: A systematic review of programs and policies. *Expert Rev Vaccines* 2021; 20: 661-78.
7. Khan MU, Ahmad A, Salman S, Ayub M, Aqeel T, Haq N, et al. Muslim scholars' Knowledge, Attitudes and Perceived Barriers Towards Polio Immunization in Pakistan. *J Relig Health* 2017; 56: 635-48.
8. Shah SFA, Ginossar T, Weiss D. "This is a Pakhtun disease": Pakhtun health journalists' perceptions of the barriers and facilitators to polio vaccine acceptance among the high-risk Pakhtun community in Pakistan. *Vaccine* 2019; 37: 3694-703.
9. Tajfel H, Turner JC. An integrative theory of intergroup conflict. In: Austin WG, Worchel S, eds. *The social psychology of intergroup relations*. Monterey, CA: Brooks Cole; 1979, pp. 33-47.
10. Elek E, Miller-Day M, Hecht ML. Influences of personal, injunctive, and descriptive norms on early adolescent substance use. *J Drug Issues* 2006; 36: 147-72.
11. Quinn SC, Hilyard KM, Jamison AM, An J, Hancock GR, Musa D, et al. The influence of social norms on flu vaccination among African American and White adults. *Health Educ Res* 2017; 32: 473-86.
12. Sinclair S, Agerström J. Do social norms influence young people's willingness to take the COVID-19 vaccine? *Health Commun* 2021: 1-8.

13. Terry DJ, Hogg MA. Group norms and the attitude-behavior relationship: A role for group identification. *Personality and Social Psychology Bulletin* 1996; 22: 776-93.
 14. Faul F, Erdfelder E, Lang AG, Buchner A. G*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behav Res Methods* 2007; 39: 175-91.
 15. Stoet G. PsyToolkit: A software package for programming psychological experiments using Linux. *Behav Res Methods* 2010; 42: 1096-104.
 16. Stoet G. PsyToolkit: A novel web-based method for running online questionnaires and reaction-time experiments. *Teach Psychol* 2017; 44: 24-31.
 17. Saleh, W. Attitude towards polio vaccination: Uncertainty-identity theory in perspective. [Unpublished MPhil dissertation]. Islamabad, Pakistan: National Institute of Psychology, Quaid-i-Azam University; 2020.
 18. Hogg MA, Mahajan N. Domains of self-uncertainty and their relationship to group identification. *J Theor Soc Psychol* 2018; 2: 67-75.
 19. Cohen J. A power primer. *Psychol Bull* 1992; 112: 155-9.
 20. Reese G. Common human identity and the path to global climate justice. *Climatic Change* 2016; 134: 521-31.
 21. Dawson A. The moral case for the routine vaccination of children in developed and developing countries. *Health Aff (Millwood)* 2011; 30: 1029-33.
 22. Van Der Linden S, Maibach E, Cook J, Leiserowitz A, Lewandowsky S. Inoculating against misinformation. *Science* 2017; 358: 1141-2.
 23. Hogg MA, Smith JR. Attitudes in social context: A social identity perspective. *Eur Rev Soc Psychol* 2007; 18: 89-131.
 24. Lewandowsky S, Ecker UKH, Seifert CM, Schwarz N, Cook J. Misinformation and Its Correction: Continued Influence and Successful Debiasing. *Psychological Science in the Public Interest* 2012; 13: 106-31.
 25. Iqbal MS, Iqbal MW, Iqbal MZ, Bahari MB. Knowledge, Attitude and Perception of Polio (Poliomyelitis) among General Public in Pakistan. *Value Health* 2015; 18: A591.
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