

Effective Messages in Vaccine Promotion: A Randomised Trial

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SUMMARY

This paper [1] presents a randomized controlled trial (RCT) comparing four types of messages, designed to promote MMR vaccination among parents of eligible children against a control (non-vaccination related) message, using three outcome measures designed to reflect: (i) misperception that MMR vaccine causes autism, (ii) perceptions about serious side effects related to the vaccine, and (iii) parental intent about using MMR vaccine for a subsequent child. The four intervention messages were: (a) 'Autism correction' which focused on evidence delinking MMR vaccine and autism; (b) 'Disease risks' that presented information about risks associated with measles, mumps, rubella – as well as adverse events associated with MMR vaccine; (c) 'Disease narrative' which presented a case study with a parent describing the experience of her child contracting measles; and (d) 'Disease images' presenting images of children with the three diseases. The investigators conducted online interviews in two phases amongst a cohort of parents believed to represent the population of United States. The authors reported that 'Autism correction' message resulted in the intervention group having significantly lower odds of believing that MMR vaccine causes autism (compared to the control group), but also significantly lower odds of intent to vaccinate a subsequent child. People who received the 'Disease narrative' had higher odds of having perceptions about vaccine side effects. Likewise those who received 'Disease images' had higher odds of believing that MMR vaccine causes autism. None of the four intervention messages consistently resulted in positive attitudes towards MMR vaccine across the three outcome measures.

COMMENTARIES

Evidence-based-medicine Viewpoint

Relevance: Although MMR vaccine is not in the Expanded Program on Immunization (EPI) in India, and the misleading paper [2] attempting to link autism to the vaccine has not generated the same levels of hype and hysteria as in developed countries [3-5] – any study exploring interventions to enhance uptake of routine

childhood (EPI) vaccines can be regarded as relevant to the Indian setting. It is also relevant because most public-health messages related to vaccination are provided to the population in a bland, unimaginative manner compared to the catchy, appealing strategies used for advertising commercial goods to the target audience. Health messages are also generally not pre-tested for content validity, appeal and visual impact before release to the public. The issue has broader implications beyond vaccination – for promotion of positive attitudes and behaviors across health issues (for example, smoking, high-risk sexual behavior, exercise, diet/nutrition).

Critical appraisal: This study is described as a randomized trial; however the elements associated with a high quality RCT are not described adequately. For instance, the generation of randomization sequence, and methods for allocation concealment are not mentioned. Similarly, the investigators were unaware of assignment groups 'until data were delivered' suggesting the absence of blinding. Data collection was through an online interview; internet access and skills to complete online survey could be potential confounding factors. It is unclear how structure of the questionnaire or the background characteristics of the population affected the participant responses. Given the importance of this trial and its potential impact on individual choices as well as community perception of vaccination, it is unclear how/ why the trial was exempted from an institutional ethical clearance. The subsequent finding that some of the participants who received the intervention messages were more likely to believe and/or adopt the inappropriate perception and/or behavior raises this concern further.

The authors convey their results as though the trial is designed as a before-after intervention (which it is not). Therefore, statements with terms suggesting intervention-related increase/decrease for various outcomes have to be interpreted as higher/lower odds (compared to control). Finally, given the inexplicable divergence of the results in terms of the outcome measures, it is also possible that these are statistical artefacts.

Extendibility: There are important reasons why the study

design, results and implications may not be directly extendible to our setting. First, it is not entirely clear whether vaccination refusal decisions and choices in India are based at the individual or societal level. If vaccination choices are mostly personal, then the strategies to enhance vaccination coverage have to focus on determination of causes for individual choices and tailor-made tactics to overcome them. Second, the level of understanding and insight into clinical conditions prevented by vaccines may not be sufficient for people to be influenced by the kind of messages outlined in this study. The authors reported that pediatricians are regarded the most trusted source for vaccination information in USA; this need not be the situation in our context. Third, very little information is available about positively-framed *versus* negatively framed messaging [6-9] in our setting. For example, a statutory warning that tobacco smoking is injurious to health has been prevalent for decades but yielded little impact. Recently, even more negatively framed messages with visual images have been introduced, but the impact of these also is unclear. In the context of vaccination, the relative impact of positive (gain) *versus* negative (loss aversion) *versus* mixed messages has not been determined. Last but not the least, this study has clearly demonstrated the gap between empowering people with knowledge, and translating that knowledge into action. This phenomenon is extendible to the Indian setting also, whereby merely providing messages to promote vaccination (or any other behavior oriented towards better health) may not yield the desired results.

Conclusions: This study suggests that providing four different types of messages to allay anxiety about MMR vaccine and promote its uptake, did not consistently yield the expected results. Further, the importance of appropriate framing (positive, gain-framed *versus* negative, loss-aversion framed) and pre-testing of messages is highlighted. Although there are limitations in extrapolating the findings to the Indian context, it can be a stimulus to rethink the portfolio of Information, Education, Communication (IEC) messages used in our health-care system.

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Public Policy Viewpoint

This is an interesting study that highlights the significant communication challenges in influencing the families' decision to immunize their children. Despite improvements in the last decade, India has a low

immunization coverage, and has one of the largest pool of unimmunized children in the world. In such a situation, it is extremely important to understand and address the barriers to improved immunization coverage.

Families' perceptions on the benefits of immunization as well as on their potential adverse effects act as significant barriers to immunization uptake in India. Coverage Evaluation Survey conducted by UNICEF and Government of India in the year 2009 showed that – of parents whose children were unimmunized – 54% either did not feel the need for vaccines, or did not know about the vaccines, or did not know where to get the child vaccinated. Another 8% feared side effects. In wake of these and similar findings earlier, recent public health strategies argue for strengthening communication initiatives for improved immunization.

The study presented here suggests the complexity in improving the families' perception about immunization despite well-designed and intensively delivered communication messages. While there were some improvements in knowledge with respect to lack of adverse effects of MMR vaccine, there was no significant improvement in intention to immunize across the three intervention arms. If the families' perceptions are so difficult to improve even in a research setting, what are the lessons for immunization programs in India? Polio eradication in India has shown that – when guided by formative research, supported by adequate investments and managed by communication professionals – resistance to immunization can be removed on a very large scale. To achieve similar results for routine immunization where complexities are likely to be even greater, how would public policy need to respond?

Most importantly, there needs to be much greater investments in behavior and social change communication (SBCC) interventions for immunization (and for other child survival programs). Till now, despite the recognition of importance of SBCC, the investments have been sub-optimal. Secondly, there needs to be significant capacity enhancement of the SBCC or IEC units of ministries at the National and State level. Over the years, this capacity has progressively diminished. The policies should make increasing investments in behavioral research in different contexts (such as this study) to guide the health programs.

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Public Health Viewpoint

In this trial, it would have been nice to have better participation rates so that findings are more generalizable. Nevertheless, considering the overall better design of individual randomization and robust analysis, validity is quite high for the study population. They conclude that current public health communication about vaccines in USA may increase misconception and decrease parental intent to vaccinate a child, and could be counter-productive. This study once again demonstrates that health education is a complex process. It may have un-intended consequences. Hence, they have rightly cautioned about the need to test health education materials and strategies before large scale application.

Since high vaccination coverage is required for the control/elimination or eradication of some of the infectious diseases, a vaccine promotion strategy should address not only 'supply' side issues related to vaccine delivery but should also consider 'demand' related issues. Communicating the benefits of vaccines has been considered to be a simple and straightforward issue, but explaining the risk – however small it may be – has been a complex issue. Since vaccines are to be administered to healthy children, strategies for management of adverse events following immunization should be in place. Even a small risk to the child is likely to be of serious concern to the parents leading to reluctance for vaccination. The policies on what to communicate, how much to communicate, how to communicate or whether to have informed consent or not before vaccination, are not yet very clear. Studies need to be carried out to sort out some of these issues. Randomized trials may provide scientific evidence on what works better but vaccine providers would also need to master the art of communicating the risk and benefits in a manner that parents can comprehend.

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