

Research Article

A qualitative study on the effectiveness of displayed health education materials (HEMs) in an immunization clinic of a tertiary care hospital in West Bengal, India

Maumita De¹, Saikat Bhattacharya^{1*}, Soumitra Mondal²

¹ Department of Community Medicine, Nil Ratan Sircar Medical College, Kolkata, West Bengal, India

² Department of Biochemistry, Shri Vasant Rao Nalik Government Medical College, Yavatmal, Maharashtra, India

* **Correspondence:** ressaikat@gmail.com. **Phone:** +919038279672

Received 21 July 2022; **Accepted** 13 December 2022; **Published** 02 February 2023

ABSTRACT

Background: Health education materials are intended to percolate certain messages to the general population in order to influence their knowledge and attitude toward health issues. The current study aims to determine the effectiveness of health education materials in terms of visibility, attractiveness and clarity of message perceived by the study participants.

Method: A cross-sectional qualitative study was conducted in the immunization clinic of a tertiary care hospital in West Bengal, India, upon 32 caregivers accompanying the children for immunization. Their explanation of the posters was recorded, transcribed, and translated into English. Results were obtained by analyzing data in both MS Excel and Visual Anthropac.

Results: Out of 20 displayed posters, 12 were mostly situated around the vaccination table and had a pictorial presentation with child images. Those posters were first noticed by the participants while waiting. After the pile sorting of 10 attractive posters, four were related to child health, four were about nutrition and breastfeeding, and 2 were included under the personal hygiene group. Only a single poster associated with Vitamin A oil was fully understood by all respondents. A total of 6 posters were fully or partially understood by more than 80% of the respondents, whereas 3 posters related to personal hygiene were wrongly interpreted.

Conclusion: The health education materials in the immunization clinic may be planned in clear pictorial presentation with less text, so those could be noticed easily and accompanied with audiovisual aids for understanding correctly.

Keywords: Effectiveness; health education material; immunization clinic

INTRODUCTION

Health education is a vital component of the primary prevention of disease. It is an intentional activity carried out to inform the population about different ways to prevent communicable and non-communicable diseases, as well as make the mass aware of presentations of a disease, its complications, and good treatment practices.¹ Prevention is always superior and less expensive than treatment, so it has become a quintessential part of any health program. India is the second largest populous country in the world, with a doctor-patient ratio of only 1: 834, much less than the developed countries.² Hence it depends more on health education for the control of different diseases.

Health education can be conveyed in different ways like miking, mass media, folk media, posters, pamphlets, etc. But in institutional settings, displayed health education materials in the form of posters and banners remain the better choice for health promotion of a more significant proportion of the population.³ These banners and posters are displayed in different sizes, sites of a health institution, both pictorial and text forms. The written language may again be either English or the local language. These posters also intended to percolate messages on various health-related topics like maternal and child health, immunization, breastfeeding; nutrition; family planning; infectious diseases and non-communicable diseases; personal hygienic measures etc. This way, displayed health education materials can incorporate diverse selection by the viewers due to their attractiveness, as interpreted in front of the eyes of the patients, patient parties, and people in general. A study in Manchester city by Ward K et al. reported that about 82% of patients in the waiting room noticed the poster, 98% of them remembered the subject of the display, and 53% of patients were interested in getting more information about a topic.⁴ Effective health education thus brings about positive changes in knowledge, attitude, and behavioral practices in some regions of concern.¹

There is a shortage of similar studies in developing countries like India, where the literacy rate is poor compared to countries like the USA and the UK. Moreover, most studies³⁻⁴ were conducted in General Outdoor or indoor settings where patients or patient parties are presumably more stressed than immunization clinic attendees. So, we don't know how these HEMs are perceived in relatively less stressed conditions in the Indian scenario. Different types of health education material (HEM) are displayed all over the room of the immunization clinic in our study setting. Mothers and caregivers spend at least 35-40 minutes in the clinic, as it is mandatory for the child to wait at the vaccination site for at least 30 minutes after vaccination. This gives caregivers ample time to look around. Again, they are not accompanying any patient with active disease, so presumably, they will be facing less stress than the others with patients. Hence this study aims to determine the effectiveness of health education materials displayed in an immunization clinic of a medical college in West Bengal, India, in terms of visibility, attractiveness and clarity of message as per the study participants' understanding. This research will further contribute to design more attractive

and clear HEMs for the propagation of health-related information to the beneficiaries and to bring about desired changes in their health behavior.

METHOD

The study was a cross-sectional institution-based qualitative study. This study was carried out in the routine immunization clinic of a tertiary care Medical College of Kolkata, West Bengal in India, for six months upon the mothers and caregivers accompanying the children for immunization. Kolkata is a metro city in the state of West Bengal in eastern India. The population from rural areas and nearby urban areas visit medical colleges for different purposes, including immunization of children.

The sampling technique applied was maximum variation sampling, where variation was based on the literacy status of study participants in terms of four groups viz. illiterate, educated up to primary school, educated up to higher secondary, graduated and above. From each group of 8 participants, thus a total of 32 caregivers were interviewed, two caregivers each week.

Caregivers of children of different age groups from birth to 16 years were taken. Both Male and female caregivers were interviewed wherever applicable. The interview was on a one-to-one basis so that others' opinions did not influence one's answer. At the time of exit from the clinic, the interviews were carried out with written informed consent. All the points related to the study were described in the local language to the illiterate participants in the presence of a witness. Thumb impressions of illiterate subjects were taken in the informed consent sheet.

First, they were asked which posters they could remember noticing while waiting in the immunization clinic and where they were located. After showing the researcher all the health education materials and their positions in the immunization clinic, they were asked to list ten posters/banners according to attractiveness. Those posters or banners may or may not be similar to those they first observed during waiting. The listed attractive posters were shown separately to five interns (posted in the immunization clinic). They were asked to sort them into different piles per commonality regarding topic and presentation. Lastly, study participants were asked whether they understood messages given by the health education materials they first noticed while waiting there and the ten most attractive posters/banners as per their choice. Their explanation of the posters was recorded with prior permission and then transcribed and translated into English from a local language. Had they understood the theme or area of health education message but not the exact message itself, it was termed as partial 'understanding'. Results were obtained by analyzing data in both MS Excel and Visual Anthropac.

Ethical approval was taken from the Institutional Ethics Committee (Memo No: NRSMC/IEC/34/2022), and then permission was sought to obtain informed consent from the

participants. The study could confer minimal risk to the participants, particularly on privacy and confidentiality issues maintained throughout the study.

RESULTS

As per the demographics (Table 1), most participants, i.e., 26 respondents were mothers of children, and 6 of them were fathers. The participants ranged from 17 to 40 years, with the median being 25, while the age of the children they were accompanying ranged from 6 weeks to 12 years. Most of the mothers had two children. 20 of the 32 subjects were from urban areas. According to literacy status, the lowest educational qualification is illiterate, and the highest is Graduate. Most of the caregivers were mothers & most of them were homemakers. According to the modified B.G. Prasad socio-economic scale 2021,⁵ most belonged to class III. The mean waiting time for caregivers was 40 minutes, with 30 minutes minimum and 45 minutes maximum waiting time.

Table 1. Sociodemographic profile of the study participant (n =32)

Variables	Characters	No (%)
Gender	Female	26 (81.3)
	Male	6 (18.7)
Age Group (years)	< 20	2 (8.4)
	20 – 30	24 (73.9)
	>30	6 (17.7)
Age of child	<6 months	6 (18.8)
	6 months -1 year	10 (31.3)
	1year- 2 years	9 (28.1)
	2years- 5 years	2 (6.3)
	>5 years	5 (15.5)
Residence	Urban	20 (62.5)
	Rural	12 (37.5)
Occupation	Homemaker	22 (68.7)
	Working	10 (31.3)
Education	Illiterate	8 (25.0)
	Up to Primary school	8 (25.0)
	Up to higher Secondary	8 (25.0)
	Graduation & above	8 (25.0)
Socio-economic class	I (Upper)	2 (6.3)
	II (Upper Middle)	3 (9.3)
	III (Middle)	20(62.5)
	IV (Lower middle)	4 (12.6)
	V (Lower)	3 (9.3)
Waiting time	30 minutes	10 (31.3)
	30-40 minutes	19 (59.3)
	>40minutes	3 (9.4)

In the immunization clinic, a total of 20 different health education materials were displayed in other places and of various sizes. In interviewing, subjects, on average, recalled seeing three posters/banners. After interviewing 32 participants, a total of 12 different posters were found to be noticed by the participants while waiting. This result shows that most of the displayed education materials the subjects saw were similar. 2 of the materials, one displayed behind the public health nurse administering immunization and one on the left side of the inner wall of the exit door, were noticed by all the 32 participants. Other places where displayed posters were noticed were the top of the window, beside the window, on the corridor just after the final staircase, etc.

When the subjects were asked to find out the five most attractive posters, they identified those posters/banners 1st noticed by them. The 32 participants identified a total of 10 different posters to be the most attractive. All 32 participants mentioned three among them, the topic of those three being two on vaccination and one on breastfeeding, and all three contained a single big image as a central theme. After pile sorting by five interns, all the posters/banners were divided into three groups per topic: child health, including immunization; nutrition, including breastfeeding; miscellaneous, including personal hygiene & family planning. 4 out of 10 posters were related to child health, including immunization, four about nutrition & breastfeeding, and two about hand washing and personal hygiene (Figure 1).

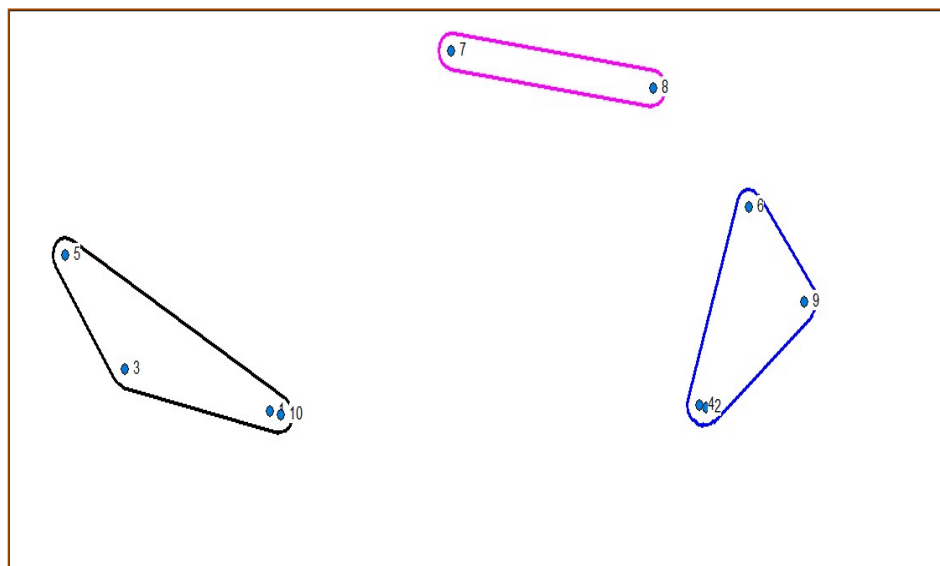


Figure 1. Piles showing health education posters according to the topic discussed

- = Cluster 1 contains posters on child health, including immunization
- = Cluster 2 contains posters on nutrition and breastfeeding
- = Cluster 3 contains miscellaneous posters like hygiene & family planning

While sorting those as per the presentation of display material, three piles were found. The first pile contains those posters with single or very few big pictures with one or two lines of written message. This pile had 5 of 10 posters. The second pile contained more than three pictures with some writing in tabular or grid patterns. This group included four posters. A

single poster was on the 3rd pile, which contained posters with only written messages with logos or graphics (Figure 2). Though in the first pile, people chose posters with English messages to be attractive, none of the posters in piles 2 or 3 contained any English messages, and all of the posters selected in these two piles were written in the local language.

When the transcribed and translated interviews of the respondents were analyzed, it was found that only one poster was fully understood by 100 %. It is intended to teach the importance of Vitamin A oil doses under the National Immunization Schedule (NIS). A total of 6 posters were fully or partially understood by more than 80% of the respondents. There were three posters which, though found to be attractive but misunderstood by the participants. 2 of those posters were on hygiene, and one was thought to be talking about girl education. Another poster on hand washing was interpreted as the supply of drinking water from the pipeline. The poster with no picture was correctly interpreted by those who could read Bengali, but others did not understand anything about it.

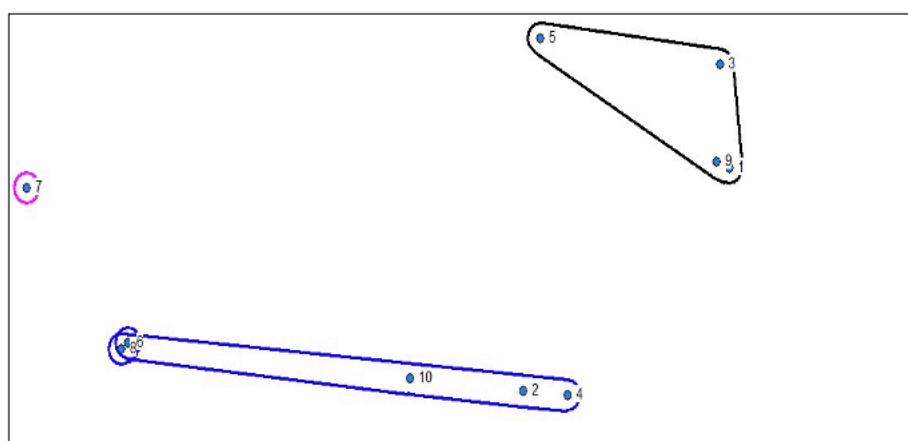


Figure 2. Piles showing health education posters according to the type of presentation

- = Cluster 1 contains posters having a single big picture
- = Cluster 2 contains posters having multiple small pictures with a message in the local language
- = Cluster 3 includes a poster with no pictures and writing in the local language

DISCUSSION

This study focused qualitatively on the perception of a specific group population about HEMs. Previously some studies were conducted in developed countries like the UK, Singapore, and France,⁶⁻⁸ but all of them took the general population as study subjects. They were either admitted or morbid patients waiting for Doctor's consultation in the General Emergency room. On the other hand, we took a particular group of study subjects who were healthy mothers/caregivers of children attending routine immunization at a Government Medical College in West Bengal, India. As they are apparently disease free, they may have ample stress-free time to look around the immunization room and check out the HEMs. But they hardly did so actively.

When after the waiting time of 30 minutes, they were asked about three posters they had noticed during that period. They were primarily non-responsive. With extensive probing, most of them could only remember one poster precisely. Only 5 (16.7%) respondents could remember three posters vaguely. This is much less than the previous studies conducted in the UK.^{6,9} Whereas previous studies just enquired whether they had noticed a HEM, we tried to pinpoint the placement of noticed posters to ensure whether they had noticed the posters or just gave a socially acceptable response. Our study indicates that noticeability depends on the place of display of that poster. Those posters displayed in and around the vaccination area are more noticeable than those in the corridor or waiting area. This, in turn, shows subjects noticed more posters in a relatively greater stressed environment when the child was getting vaccinated. Maybe the mothers looked away from the child to avoid observing the injection procedure and noticed the HEMs nearby. All the other times, they were too preoccupied with their children to notice posters around. So, for immunization clinics, posters with the most important messages must be displayed around the vaccination area. To the best of our knowledge, no previous studies tried to pinpoint the importance of display position on the noticeability of posters elsewhere.

Then the subjects were passively exposed to all the posters and asked about their attractiveness of them. It is seen that most of the posters with child pictures or anything associated with children, like pictures of food-item, injections, and vaccine vials, were more attractive to them. This finding goes hand in hand with the study done in Manchester - UK,⁴ where adolescents found posters on smoking cessation and HIV-AIDS more attractive. So, it can be said that attractiveness depends on the subject's mental state and priority areas at that time. When the designs of the posters were pile sorted, it was found that the most attractive posters had big single or two pictures with very minimal writing. Posters with multiple small pictures followed this. So, all of these indicate that pictorial presentation of health education materials was more acceptable to subjects in our scenario. It differs from the UK study.⁹ Here, researchers found that posters with a written message were more attractive.

No foreign language poster was found in most UK study settings.⁶ On the other hand, most of the posters were in English, followed by Bengali, the local language. For many Indians, especially from lower socio-economic strata, English is a foreign language they can't read. Some of our study subjects were Hindi-speaking, too, as Kolkata is a cosmopolitan metro city where people from different parts of India with varying tongues of mother reside temporarily. The language barrier may be one reason for choosing pictorial posters as attractive.

Whether the intended message was perceived by the subjects properly is another novel approach for this study. Previous studies (UK, Manchester)^{4,6} explored whether subjects read or remembered the message but whether they understood the actual meaning was not elicited. Here it is seen the subjects correctly interpreted that very few posters, and in many cases, their understanding was vastly different from the actual message. Language barriers,

a relatively lower level of literacy status, and less attentiveness towards the HEMs may be the reasons behind this faulty understanding. A study conducted in Louisiana, USA, concluded that comprehension of health education materials depends on the comprehension power of the subjects, and at least 6th-grade education is essential for understanding.¹⁰ The situation is more complicated in India as, unlike in the USA, here local language varies from state to state, and many literate persons are not very comfortable with English, let alone illiterate ones. Unsurprisingly, our study found that posters with only the English language are the least attractive. So, the chance of comprehension of those posters is relatively less even for those with a lower formal education level.

As the attendees of immunization clinic in the Government setting of a developing country finds pictorial presentations more attractive, those pictures must be designed so that no alternate meaning is conveyed to that. Otherwise, it may jeopardize the whole purpose of the display of HEMs. A Malaysian study found that health education materials are more perceived when doctors discuss them.¹¹ In our setting, it is difficult for the health care providers to explain the HEMs due to workload and scarcity of time. This may be another reason for the present study's poor perception of the posters. A recent study in the Netherlands opined that there should be a strategy to ensure patients' understanding of diseases and more active use of HEMs, as many patients are still health illiterate.¹² Similar studies were conducted all over the world. All have opined that patients hardly want to be health literate, and their participation in health-related active decision-making is very low unless facilitated by healthcare providers, preferably doctors.¹³⁻¹⁶ Health literacy is a major challenge in a developing country like India, and only displaying HEMs is not the solution. Though difficult, the active participation of Health care providers is essential in this regard.

It should also be noted that in this era of audiovisual entertainment, visual HEMs have far less appeal than audiovisual media.¹⁷⁻¹⁹ Previous studies have pointed out that health education in waiting rooms through television or projected animations or movies has better noticeability and comprehension than pamphlets and posters.²⁰⁻²¹ So it is recommended that along with posters, there should be some provision for audiovisual teaching in the immunization clinic. It will breach the literacy barrier, and if given in the local language, it may have a far-reaching impact on subjects' health literacy.

The limitation of the study was that it was carried out only among healthy caregivers of children attending immunization clinics. Their relative stress-free condition may give us a better noticeability & understanding of HEMs. It may differ if conducted upon patients visiting outdoors or indoor hospital areas portraying HEMs.

CONCLUSION

Caregivers of children attending Immunization clinics hardly notice HEMs actively. When they do, they notice posters behind or beside the vaccination table. Mothers of vaccinated children found pictorial posters related to child pictures more attractive, and very few of them

correctly understood the message conveyed through the posters. A more extensive study with a Likert scale for both poster design and topic may give us further knowledge, which will help us to design and display more effective posters of health education materials in the future.

Acknowledgement

We would like to express our heartfelt gratitude to the hospital authorities for their kind support during the research. We thank the participants for their patience and cooperation in completing the interview.

Declarations

Authors' contribution

Research design: SB, SM. Data collection: MD, SB, Analysis: SB, Manuscript preparation: MD, SB

Funding Statement

This research has not received external funding.

Conflict of interest

There is no conflict of interest in this research.

REFERENCES

1. Tones K. Health education: evidence of effectiveness. *Arch Dis Child*. 1997 Sep 1;77(3):189–91.
2. Deo M. Doctor population ratio for India - The reality. *Indian J Med Res*. 2013 Apr 1;137:632–5.
3. Preston MA, Baranowski T, Higginbotham JC. Orchestrating the points of community intervention: enhancing the diffusion process. *Int Q Community Health Educ* 1988 Jan 1;9(1):11–34.
4. Ward K, Hawthorne K. Do patients read health promotion posters in the waiting room? A study in one general practice. *Br J Gen Pract* 1994 Dec;44(389):583–5.
5. Majhi M, Bhatnagar N. Updated B.G Prasad's classification for the year 2021: consideration for new base year 2016. *J Fam Med Prim Care* 2021;10(11):4318.
6. Maskell K, McDonald P, Paudyal P. Effectiveness of health education materials in general practice waiting rooms: a cross-sectional study. *Br J Gen Pract* 2018 Dec;68(677):e869–76.
7. See MTA, Chan WCS, Huggan PJ, Tay YK, Liaw SY. Effectiveness of a patient education intervention in enhancing the self-efficacy of hospitalized patients to recognize and report acute deteriorating conditions. *Patient Educ Couns* 2014 Oct;97(1):122–7.

8. Gignon M, Idris H, Manaouil C, Ganry O. The waiting room: vector for health education? the general practitioner's point of view. *BMC Res Notes* [Internet]. 2012 Dec;5(1). Available from: <https://bmcrsnotes.biomedcentral.com/articles/10.1186/1756-0500-5-511>
9. Montazeri A, Sajadian A. Do women read poster displays on breast cancer in waiting rooms? *J Public Health*[internet]. 2004 Dec 1[cited 2022 July 24];26(4):355–8.
10. Davis TC, Crouch MA, Wills G, Miller S, Abdehou DM. The gap between patient reading comprehension and the readability of patient education materials. *J Fam Pract* 1990 Nov;31(5):533-8. PMID: 2230677.
11. Jaafar N, Perialathan K, Zulkepli MZ, Mohd Zin Z, Jono PE, Johari MZ. Patients' Perception Towards Health Education Services Received at the Enhanced Primary Healthcare Facilities: A Qualitative Exploration. *J Prim Care Community Health* 2020 Jan;11:215013272098062.
12. Murugesu L, Heijmans M, Rademakers J, Fransen MP. Challenges and solutions in communication with patients with low health literacy: Perspectives of healthcare providers. *PLoS One* 2022 May 4;17(5): e0267782. doi: 10.1371/journal.pone.0267782. PMID: 35507632; PMCID: PMC9067671.
13. Ousseine YM, Durand MA, Bouhnik AD, Smith AB, Mancini J. Multiple health literacy dimensions are associated with physicians' efforts to achieve shared decision-making. Patient education and counseling. 2019. doi: 10.1016/j.pec.2019.05.015 .
14. Elwyn G, Frosch D, Thomson R, Joseph-Williams N, Lloyd A, Kinnersley P, et al. Shared decision making: A model for clinical practice. *J Gen Intern Med*. 2012;27(10):1361–7.
15. Légaré F, Witteman HO. Shared decision making: examining key elements and barriers to adoption into routine clinical practice. *Health affairs* 2013;32(2):276–84. doi: 10.1377/hlthaff.2012.1078
16. Vennedey V, Hower KI, Hillen H, Ansmann L, Kuntz L, Stock S. Patients' perspectives of facilitators and barriers to patient-centred care: insights from qualitative patient interviews. *BMJ open* 2020;10(5), e033449. doi: 10.1136/bmjopen-2019-033449
17. Wicke DM, Lorge RE, Coppin RJ, Jones KP. The effectiveness of waiting room noticeboards as a vehicle for health education. *Fam Pract* 1994; 11(3): 292–295.
18. Shah A, Scogin F, Pierpaoli CM. Older adults' attitudes toward depression screening in primary care settings and exploring a brief educational pamphlet. *Int J Geriatr Psychiatry* 2018; 33(1): e40–e48.
19. Jawad M, Ingram S, Choudhury I, et al. Television-based health promotion in general practice waiting rooms in London: a cross-sectional study evaluating patients' knowledge and intentions to access dental services. *BMC Oral Health* 2016; 17(1): 24.
20. Eubelen C, Brendel F, Belche JL, et al. Effect of an audiovisual message for tetanus booster vaccination broadcast in the waiting room. *BMC Fam Pract* 2011; 12: 104.
21. Koperski M. Health education using video recordings in a general practice waiting area: an evaluation. *J R Coll Gen Pract* 1989; 39(325): 328–330.