

## Research Article

# Impact of a clinic based literacy intervention Reach Out and Read (ROR) modelled program on preschool children in India

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## ABSTRACT

**Background:** Pediatricians play an important role in linking literacy with primary health care services. The aim of the study was to establish the feasibility and applicability of “Reach out and Read (ROR) - a clinic based literacy programs” in Indian scenario.

**Methods:** Prospective randomized case control study in the well-baby clinic of a tertiary care hospital. Parent- child duos (9 months to 5 years) were exposed to literacy interventions at the time of their routine visit to the pediatrician. The change in reading behavior of the parent child duo was compared to age matched controls over a period of 18 months. Parent- child duos (9 months to 5 years) were exposed to literacy interventions at the time of their routine visit to the pediatrician. The change in reading behavior of the parent child duo was compared to age matched controls over a period of 18 months.

**Results:** There was significant improvement in the reading behaviour of the parents and children exposed to literacy intervention as compared to the control group ( $p < 0.05$ ).

**Conclusions:** ROR modelled programs if incorporated in the routine health visits would promote literacy and school readiness in our children.

**Keywords:** Reach out and Read (ROR), Literacy programs, Pediatricians

## INTRODUCTION

The Reach Out and Read (ROR) is a literacy promotion model innovated by Pediatricians Barry Zuckerman and Robert Needlman in 1989. The mission of ROR is to unite literacy promotion with pediatric primary care, so that children who come to clinics would grow up with books and develop a love for reading. ROR works with a three-component system, involving Pediatricians to promote early literacy skills in children from age six months to five years. The program has been running successfully all over the United States with more than

four million children benefited from it.<sup>1</sup> It is officially endorsed by the American Academy of Pediatrics.<sup>2</sup>

The aim of our study was to establish the feasibility and applicability of ROR modeled program in Indian scenario.

## METHODS

It was an eighteen months prospective randomised case control study implemented between August 2012 and

May 2014 in the out-patient Department of Pediatrics in a tertiary care hospital.

All apparently normal children from nine months to five years of age attending our well baby clinic were included in the study after taking consent from their parents. Known cases of developmental delay were excluded from the study.

Children were randomly assigned into two groups based on days of OPD visits, firstly the cases: those who were exposed to literacy intervention and then the controls who did not receive any such interventions. Both were divided into age related five sub groups – 09 to 12 months; 13 to 18 months; 19 to 24 months; 25 to 36 months; 37 to 60 months. Each group comprised of 25 children and total sample size of 250 Data was collected by standardized pretested questionnaire provided by the ROR organization. Interaction was done with parents either before or after the child's visit with the physician.

Those children and families in the case group were subjected to literacy intervention along with routine health care. Literacy intervention comprised of 1) waiting room program (book-corner and volunteers who read to the children); 2) anticipatory guidance about literacy development; and 3) distribution of age-appropriate children's books at each clinic visit.<sup>3</sup>

Anticipatory guidance was given to parents in the form of highlighting the advantages of reading aloud, how they could help their children to develop love for books, and how the ROR program being run abroad had promoted early school readiness. They were guided about what they should expect out of their children according to age and were also encouraged to incorporate reading aloud in their daily activities so that time constraint for working parents could be negated. They were motivated that their small involvement would result in vast development of their children's language skills. At the end of the visit, the child was given a new, age-appropriate book to take home.

While those in the control group underwent only routine health care visits. These children were followed up at every six months for 18 months.

On subsequent six monthly visits in all participants in the case group apart from routine health check-up, parental motivation, distribution of books and assessment of reading behaviour was done. The outcomes were measured in terms of:

1. Presence or absence of reading as one of child's and caregiver's amongst top three favourite activity.
2. Number of days per week the caregiver reads out to his/her child.
3. Number of days per week reading was incorporated in child's bed time activity.

4. Number of children books at home apart from those distributed by us.

In the control group, routine health check-up and assessment of reading behaviour using the same measures was done.

Statistical analyses were conducted using SPSS 20.0 (SPSS Inc, Chicago, IL). Mean values of interval data were compared across groups by using a t-test for equality of means.  $\chi^2$  was used to test nominal and dichotomized data.

## RESULTS

Out of 125 children in each group, 60 and 71 were males in case and control groups respectively.

The result showed that amongst the case group all the outcomes went on improving from the baseline to the last follow up and this change was in consonance with the increase in age with maximum improvement in the 37- 60 months age group.

When compared to the control group as depicted in Table 1 we found that apart from number of days per week reading was incorporated in child's bed time activity, all other parameters had significant improvement in subsequent follow ups ( $p < 0.05$ ).

## DISCUSSION

This study being first of its kind, hereby confirm the role of health workers especially pediatrician in promoting literacy in children through a ROR modelled program.

Earlier there have been studies where children as young as two months have been benefitted by ROR program.<sup>4</sup> Recent trend is initiating of these literacy exposures to newborns for increasing maternal involvement in educational activities.<sup>5</sup> Due to operational feasibility the age of the participants we enrolled were from 09 month to 60 months.

As seen in our results, reading as a favourite activity was reported more in the parent- child duo exposed to our literacy interventions in all the follow ups. ( $p$  value  $< 0.05$ ) this was comparable to previous studies done by Sanders et al who assessed book sharing activities in Hispanic immigrant families after distributing books.<sup>6</sup> Similar finding was observed in a study done by Robert Needleman with the objective of assessing the impact of ROR with a multicentre sample.<sup>7</sup> Apart from reading, parents quoted playing and outdoor activities as the other favourite activities they liked to indulge in.

The number of days per week the caregiver reads out to his/her child showed a significant improvement in the intervention group on all follow ups ( $p < 0.05$ ). Diener et al demonstrated that in 80% of the children exposed to

the reach out and read program the child was being read to at least three times per week.<sup>8</sup>

However, the number of days per week reading was incorporated in child's bed time activity showed no statistical difference between the cases and controls. This

was contrary to previous study done by Needlman et al whose study demonstrated a strong impact of ROR on bedtime reading (adjusted odds ratio 1.5; p<0.01). Reciting prayers and singing lullabies topped the list in our cultural scenario which may again be considered as an effective tool for communicating with the child.

**Table 1: Comparison of changes in reading behaviour of parent-child duo as seen on final follow-up.**

Age (months)	Reading as a favorite activity			Mean number of days per week the caregiver reads out to child			Mean number of children books at home			Number of days per week reading was incorporated in child's bed time activity		
	Cases	Control	P value	Cases	Control	P value	Cases	Control	P value	Cases	Control	P value
9-12	11	2	0.015	0.47	0.15	0.04	4.00	0.15	0.000	1	0	0.600
13-18	11	4	0.042	0.87	0.26	0.02	4.04	0.09	0.000	1	0	0.492
19-24	12	3	0.021	1.17	0.32	0.00	4.13	0.09	0.000	1	0	0.549
25-36	11	3	0.042	1.38	0.26	0.00	4.14	0.19	0.000	1	0	0.599
37-60	12	4	0.042	3.07	1.54	0.00	5.13	0.69	0.000	3	1	0.480

On each follow up, the number of children books at home was found to be significantly increased in the intervention group. This was because the parents were motivated and wanted their children to be exposed to a variety of age appropriate literature. This increase in number of books could also be an indicator that the parents themselves were realizing that the intervention was having a positive impact in their child. This observation was similar to a study where they found a positive correlation between the receptive and expressive language scores and the total number of children's books in the household.<sup>9</sup>

With the encouraging results of our pilot study, we recommend further similar large multicentre studies which cut across all regional and socio economic barriers.

Our study centred around the caregiver, we motivated them and looked for changes which were mainly in the caregiver, but certain definite measurable outcomes like improvement in the children's vocabulary, children's communication skills, adaptive, language and social milestones, kindergarten entrance examination performance, can be done to bring about a quantification in assessment of the impact of such interventions.

To conclude, this study which incorporates ROR in routine health care of child has clearly demonstrated a significant benefit to promote literacy and school readiness across all age groups in our set of Indian parent child duo. Hence we recommend that the program should be incorporated by all pediatricians as a part of their routine health care practice.

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