Not by bread alone project: a 2-year follow-up report

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Abstract

Background We have previously reported the developmental gains achieved, after introducing a simple programme of structured play to stimulate children in an orphanage. It was envisaged that the caregivers could continue the programme. However, the enthusiasm of the caregivers waned over the year the programme was entrusted to them. After 1 year, a full time play therapist was recruited to rejuvenate the play programme.

Methods Children's development was assessed using the Indian adaptation of the Bayley Scales of Infant Development. The first assessment was done when the play therapist joined. Subsequently, three-monthly assessments were done and the scores achieved were recorded.

Results The initial mean motor and mental scores, when the play therapist joined, were 66.14 and 56.95, respectively (similar to the pre-intervention scores of the pilot study reported in an earlier paper). The scores improved to 81.84 and 78.25 within 3 months of restarting the play programme.

Conclusion The schedule of the 'Not by Bread Alone' project can accelerate the motor and mental development of children in orphanages. However, it requires a highly motivated and dedicated person to sustain this programme over long periods.

Introduction

A large number of children are abandoned each year due to social or economic pressures. Orphanages in India are run by government or through Non Government Organizations (NGOs). Funding through government handouts or by private donations is far from optimal. Orphanages often lack sufficient funds and personnel to look after the large load of children in their care. They have therefore to prioritize the needs of the children and concentrate on keeping them alive, with food and clothes. Previous studies have shown that children in orphanages are likely to have delayed development on account of poor stimulation (Taneja *et al.* 2002, 2004).

Researchers from outside India suggest that development of deprived children improves dramatically once their environment becomes more stimulating (Casler 1961; Broussard & Decarie 1971; Yarrow *et al.* 1972; Rosenblith 1992). Studies from India have also shown this need for early stimulation programmes (Somen 1986; Sharma 1989). It has been noted previously that little effort is made to stimulate children in orphanages in India (Reghunath 1991; Singh 1993). One reason may be that there is resistance to changes that increase the workload of caregivers.

We have developed a schedule of play (Taneja *et al.* 2002) that is simple and can be utilized without formal training, for use by caregivers, which we thought was acceptable to them and did not increase their workload significantly. However, experience suggested that the enthusiasm for the pilot project among the caregivers did not last long. The involvement of the caregivers was reported to

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have decreased gradually and they slowly returned to their previous mechanical routine of cleaning and feeding the children. There was a visible decline in the development of the children in the absence of the play programme. A full-time dedicated child development specialist was therefore recruited as play therapist to rejuvenate the play programme. She joined 1 year after the pilot project. We here report the follow-up of this project in the orphanage after the play therapist joined.

Subjects and methods

There are about 40–50 apparently normally developing children at any given time in the orphanage studied. Most of the children are 1–5 years old. Children with physical and intellectual impairments are kept in another specialized centre. Children in this orphanage are offered for adoption, and thus there is a constant turnover of children. They often move out of the orphanage within 3–6 months. The play therapist started the programme again, adopting the pattern and schedule of the structured play in the pilot study described previously (Taneja *et al*. 2002). The outdoor and indoor play areas were utilized. Apart from the activities at the orphanage, outings and picnics were conducted on a regular basis. All the children present in the orphanage were involved in the play programme.

The 93 children included in the study were assessed using the Developmental Assessment Scale for Indian Infants (DASII The Indian adaptation of the Bayley scales of infant development, based on the Baroda norms) (Phatak 1995). This test scale has been validated on Indian children and used by paediatricians and psychologists all over India. As the Bayley scales are applicable to children under 3 years, we have assessed only children up to 3 years of age in our study. The development quotient (DQ) of all children of the eligible age, present at one point of time, was used as the surrogate index of how well the play programme was working. The first assessment was done 1 year after the pilot study, when the play therapist joined. Subsequently, three-monthly assessments were done and the scores achieved were recorded in the individual child's file. We have also looked at the developmental gains in eight individual children who stayed on in the orphanage and had repeat assessments after 3, 6, 9 and 12 months.

Paired *t*-tests were used to compare scores for children present at each set of two time points. For the children who remained throughout, a Friedman one-way analysis of variance was used to test for the significance of change over time.

Results

Table 1 gives the mean motor and mental quotients of all the children at the orphanage at any given point of time. The mean motor score when the play therapist joined was 66.14 (SD 16.13) and mean mental score was 56.95 (SD 13.67). Figure 1 is the graphic representation of Table 2, and also incorporates the pilot study results for comparison. In principle, the change in group scores could reflect a change in the intake of children to the orphanage over time. Therefore, paired *t*-tests were used to examine whether significant progress was made by children between time points. Table 2 shows that all comparisons were significant, for both motor and mental scores.

Eight children stayed at the orphanage for all of the 1-year period. Table 3 gives the successive mean motor and mental quotients of the eight children. The initial means were 50.15 and 48.41,

Table 1. Development quotients (mean motor and mental quotients) of all the children present in the orphanage at different times over the year

Date	No. of Children	Mean motor quotient (standard deviation)	Mean mental quotient (standard deviation)
September 2000	48	66.14 (16.13)	56.95 (13.67)
December 2000	68	81.84 (13.44)	76.25 (13.77)
March 2001	30	81.93 (10.91)	78.25 (10.69)
June 2001	27	86.88 (8.20)	83.56 (8.77)
September 2001	30	90.84 (7.45)	86.4 (6.94)

respectively, which are lower than the overall group means at the beginning of the programme. A negative selection bias was perhaps responsible for the delay in their adoption. The development of these children improved at each subsequent assessment (Friedman test, motor chi-square = 31.3, d.f. = 4, $P = 0.000$; mental chi-square = 32.0, d.f. = 4, $P = 0.000$).

Discussion

We found that the development of children improved rapidly once a programme of play was reinstituted at the orphanage. In the pilot study we reported the improvement in the development of a group of children followed up over 3 months. In the present study, we have focused on the overall development of all children present in the orphanage at any given point of time. Because of the ongoing adoption process, the children stay in the orphanage for an average of 3–6 months. Long-term studies cannot therefore follow the same children over long periods of time. In a system where the turnover of children in the orphanage is rapid, the children may not be exposed to the negative aspects of the orphanage (Rutter 1971; Sandra & Freeman 1994; Wolff *et al.* 1995) or the positive effects of play, for long periods of time. Therefore, we propose that the best index of how well the play programme is working is the overall development of all the children present in the orphanage at that point of time.

We also analysed data that was available from children who stayed at the orphanage long enough to have at least two assessments, and this confirmed that children made significant progress. We also found that children who are less well endowed intellectually are the ones who stay back in the orphanage longer, yet even in this group, play and stimulation resulted in steady improvement in development. Thus, we have confidence in the conclusion that the play programme is responsible for the overall improved developmental profile, rather than a change in the ability characteristics of the children admitted to the orphanage.

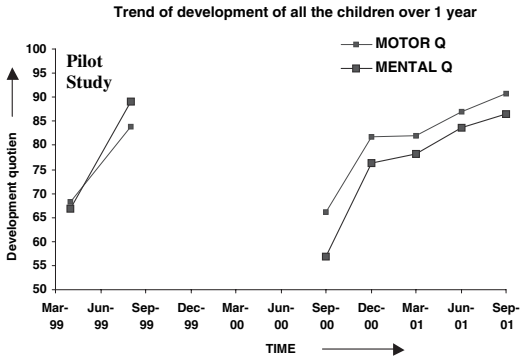

Figure 1. Trend of mean motor quotient and mental quotient of children in the orphanage over the 1-year period shown along side the improvements reported in the pilot study conducted over 3 months.

Table 2. Paired comparisons of motor and mental scores across assessment times

	n	Motor mean difference	*t*	Mental mean difference	*t*
September 2000–December 2000	48	–15.70	–13.41	–18.71	–13.05
December 2000–March 2001	23	–10.00	–9.31	–9.17	–11.32
March 2001–June 2001	22	–7.04	–7.35	–6.89	–8.58
June 2001–September 2001	16	–4.07	–5.55	–4.37	–6.67

All comparisons were significant, $P = 0.000$

Table 3. Mean motor and mental quotients of eight children over 1 year at the orphanage

	September 2000	December 2000	March 2001	June 2001	September 2001
Mean motor quotients					
Mean	50.15	60.11	73.28	81.67	84.77
SD	10.63	9.89	10.32	9.28	9.41
Mean mental quotients					
Mean	48.41	58.64	68.35	75.19	78.84
SD	12.46	10.32	9.65	7.44	6.79

The initial developmental assessments made by the play therapist were similar to the pre-intervention scores of the pilot study. This reinforces the suggestion from our previous study (Taneja *et al*. 2002) that in the absence of play, the mean developmental score of children in orphanages is around 60. The sharp rise in the mean motor and mental scores over the first 3 months was also similar to the rise seen in the pilot study. This implies that the improvements seen are the direct result of the play programme and not due to other extraneous factors. The present study has a longer follow-up than the pilot study and it suggests that the development continues to improve over the year that the children were stimulated.

A limitation of the study is that the child development specialist who did the assessments was not blind to the intervention. However, the DASII scale evaluates performance in 230 sub-tests and the scoring aims to be objective to reduce the scope for error due to bias. In our original report we argued that the caregivers could be relied on to continue the programme. This study suggests that we were wrong. We have seen that the play programme languishes if a trained and motivated person is not involved continuously. This is, at least partly, due to the turnover of caregivers. Training and motivating the fresh recruits was difficult and contributed to the play programme petering out. In the second year of the project, the role of training the caregivers was taken over by the play therapist and she maintained the crucial continuity for keeping the programme alive. For the present, it is clear that the project needs a full time play therapist to keep up the motivation for the project.

Conclusion

The schedule of the 'Not by Bread Alone' project can accelerate the motor and mental development of children in orphanages. However, sustaining this programme over long periods is not easy and requires a highly motivated and dedicated person, keen to fulfil the programme objectives. Orphanages may need to employ a full time play therapist to improve the DQ of their children.

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Institution to which the work is attributed: Department of Pediatrics and Neonatology, St. Stephen's Hospital, Delhi.

References

Broussard, M. & Decarie, T. G. (1971) The effects of three kinds of perceptual-social stimulation on the development of institutionalized infants. *Early Child Care and Development*, **1**, 111.

Casler, L. (1961) The effects of extra-tactile stimulation on a group of institutionalized children. *Genetic Psychology Mouographs*, **71**, 137–175.

Phatak, P. (1995) *Manual for Using Indian Adaptation of Bayley's Scale of Infant Development*. Based on Baroda Norms. Anand Agencies, Pune, India.

Reghunath, M. (1991) Care of the abandoned child. *ICCW Bulletin*, **39**, 23–29.

Rosenblith, J. F. (1992) *In The Beginning: Development from Conception to Age Two.* Sage Publications, New Delhi, India.

Rutter, M. (1971) Parent-child separation. Psychological effects on children. *Journal of child psychology and psychiatry, and allied disciplines*, **12**, 233–260.

Sandra, R. K. & Freeman, B. J. (1994) Analysis of environmental deprivation: cognitive social development in Romanian orphans. *Journal of Child Psychology*, **35**, 769–781.

Sharma, N. (1989) Infant stimulation-documentation of research in Delhi. UNICEF, New Delhi, India.

Singh, A. (1993) Child care in India: an ecological perspective. *ICCW Journal*, **1**, 14–17.

Somen, S. (1986) A study of mental health status of children in orphanages at Bangalore. *Indian Journal of Social Work*, **2**, 137–145.

Taneja, V., Beri, R. S. & Puliyel, J. M. (2004) Play in orphanages. *Indian Journal of Pediatrics*, **71**, 297–299.

Taneja, V., Sriram, S., Aggarwal, R., Kaur, R., Beri, R. S. & Puliyel, J. M. (2002) 'Not by Bread Alone': impact of a structured 90 minute per day play session on development of children in an orphanage. *Child: Care, Health and Development*, **28**, 95–100.

Wolff, P. H., Dawit, Y. & Zere, B. (1995) The solumuna orphanage – a historical survey. *Journal of Social Science and Medicine*, **40**, 1133–1139.

Yarrow, L. J., Rubenstein, J. L., Pedersen, F. A. & Jankowski, J. J. (1972) Dimensions of early stimulation and their differential effects on infant development. *Merrill-Palmer Quarterly*, **18**, 205–219.