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Universal parenting programme to prevent early childhood behavioural problems: cluster randomised trial

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ABSTRACT

Objective To determine whether a parenting programme, offered universally in primary care, can prevent behavioural problems in children and improve parenting and maternal mental health.

Design Cluster randomised trial.

Setting 40 primary care nursing centres (clusters) in Victoria, Australia.

Participants 733 English speaking mothers of 8 month old children sequentially recruited from well child appointments; 656 retained at 24 months.

Intervention Structured three session programme at age 8-15 months, co-led by well child providers and a parenting expert. The programme covered normal development and behaviour, strategies to increase desired behaviour, and strategies to reduce unwanted behaviour.

Main outcome measures Maternal report of child externalising behaviour (child behaviour checklist 1½-5 year old), parenting (parent behaviour checklist), and maternal mental health (depression anxiety stress scales) at 18 and 24 months.

Results At 18 months, child behaviour and parenting scores were similar in the two groups. At 24 months, externalising scores in the intervention and control groups were similar (mean 11.9 (SD 7.2) v 12.9 (7.4)); however, on the parent behaviour checklist subscale scores, intervention group parents were less likely to report harsh/abusive parenting (mean 38.9 (SD 7.7) v 40.5 (8.8); adjusted mean difference -1.83, 95% confidence interval -3.12 to -0.55) and unreasonable expectations of child development (40.9 (9.9) v 42.7 (9.6); -2.18, -3.74 to -0.62). Mean scores for nurturing parenting and maternal mental health were similar in the two groups at both times.

Conclusions A universal parenting programme resulted in modest improvement in parenting factors that predict behavioural problems in children but did not reduce externalising behavioural problems or affect maternal mental health at 2 years.

Trial registration ISRCTN 77531789.

INTRODUCTION

Behavioural problems affect one in seven 4-17 year olds in Australia and internationally.¹⁻³ Behavioural problems in children are primarily grouped as externalising (such as oppositional defiance, aggression) and internalising (such as anxiety/depression, withdrawal) problems.¹ Left untreated, up to 50% of behavioural problems in preschool children develop into later mental health problems.⁴

Management approaches to childhood mental health problems include drug treatment, individual psychotherapy, and parenting programmes, the last of which have the strongest evidence of efficacy to date.^{2,5-7} Parenting programmes share the goals of modifying aspects of parenting known to contribute to behavioural problems in children, by reducing harsh or abusive parenting, increasing warm parenting, and informing parental knowledge of normal development.^{2,5,6,8} Although effective, parenting programmes are costly and time intensive, require a trained workforce, and are currently accessible to few children.¹

Substantial effect sizes have been reported in randomised trials for approaches targeting children with early behavioural problems: 0.3-0.7 for reductions in parenting risks and 0.5-0.9 for reductions in behavioural problems.⁹⁻¹¹ Approaches targeting children with family or social risk factors also seem to be effective but have targeted restricted disadvantaged populations.^{9,12-16} No high quality evidence showing the effectiveness of universal prevention has been published.^{2,5} Here, we report intermediate trial outcomes of the first universal parenting programme aiming to prevent early childhood externalising behaviours before onset.

METHODS

Setting and participants

We ran the trial in Melbourne (population 3.4 million), Australia. We selected two each of low, middle, and high socioeconomic status areas from Melbourne's 31 local government areas. All maternal and child health nurses in these six areas participated.

In Victoria, health visits are scheduled at 1, 2, 4, 6-8, 12, 18, 24, and 42 months of age, and more than 90% of all parents attend visits during the first six months.¹⁷ Maternal and child health nurses consecutively invited mothers of 6-7 month old infants attending in 2004 to take part in the study.

Universal intervention

The intervention consisted of three sessions targeting key modifiable parenting risk factors for childhood behavioural problems: unreasonable expectations, harsh parenting, and lack of nurturing parenting.^{2,6,8} At the routine 8 month visit, mothers received literature discussing normal child development and ways to encourage language development. At 12 months, parents attended a two hour group session discussing ways to develop a warm and sensitive relationship with

their toddler and to plan for and encourage desirable behaviour. At 15 months, parents attended another two hour group session discussing ways to manage unwanted behaviour in children. All sessions took place at a local maternal and child health centre and were delivered by a nurse and a co-facilitator.

Intervention nurses attended a half hour training session and two 2.5 hour training sessions. Training incorporated didactic teaching, written information, role play, and video vignettes of appropriate parenting responses to common childhood behaviours.

Usual care

Families in the control arm received usual care from their maternal and child health centre. This may include advice on children's behaviour, but does not include a parenting programme for early childhood behaviour.

Measures

Mothers completed written questionnaires at 7 months (baseline sociodemographic details, maternal mental health, and family stress), 12 months (baseline parenting style and partner relationship), and 18 and 24 months (outcomes). The primary outcome was externalising

behavioural problems measured with the 99 item validated child behaviour checklist.¹⁸ The checklist also quantifies internalising behavioural problems. We measured parenting styles known to contribute to childhood behavioural problems with the parent behaviour checklist,⁸ and we measured maternal mental health with the depression anxiety stress scales.¹⁹ We measured children's temperament with a parent rated global temperament item.²⁰ We assigned each family an Australian index of disadvantage score.²¹

Randomisation

We randomly allocated maternal and child health centres, stratified by local government area, to intervention or control arms. Group allocation was concealed from researchers and participants until allocation was complete.

Analyses

We analysed the trial arms as randomised at the level of the individual, applying the intention to treat principle. We used linear regression models for unadjusted and adjusted analyses of the outcomes. We calculated effect sizes.

Main outcome comparisons

Outcome	Intervention arm (I)		Control arm (C)		Unadjusted mean difference	Adjusted mean difference (I minus C)	
	Mean (SD)	No	Mean (SD)	No		Estimate (95% CI)	P value
18 months							
Childhood behaviour:							
Externalising score	12.1 (6.9)	295	11.9 (6.8)	373	0.21	0.16 (−1.01 to 1.33)	0.79
Internalising score	6.0 (4.2)	295	5.6 (4.3)	373	0.40	0.49 (−0.20 to 1.18)	0.16
Parenting:							
Unreasonable expectations	41.6 (10.4)	297	43.0 (10.3)	373	−1.43	−1.58 (−3.21 to 0.05)	0.06
Warm nurturing	55.4 (9.3)	298	54.8 (9.8)	373	0.43	0.42 (−1.22 to 2.06)	0.62
Harsh discipline	42.4 (5.3)	298	42.9 (5.4)	373	−0.50	−0.72 (−1.54 to 0.10)	0.08
Maternal mental health:							
Depression	3.4 (4.3)	296	2.9 (4.3)	373	0.43	0.34 (−0.31 to 0.99)	0.30
Anxiety	1.9 (3.4)	297	1.8 (3.1)	373	0.11	0.12 (−0.37 to 0.61)	0.64
Stress	8.2 (5.7)	298	7.7 (6.1)	373	0.47	0.26 (−0.63 to 1.14)	0.57
24 months							
Childhood behaviour:							
Externalising score	11.9 (7.2)	292	12.9 (7.4)	362	−0.97	−0.79 (−2.27 to 0.69)	0.30
Internalising score	6.4 (6.1)	292	6.4 (6.0)	362	−0.02	0.19 (−0.77 to 1.15)	0.70
Parenting:							
Unreasonable expectations	40.9 (9.9)	291	42.7 (9.6)	363	−2.03	−2.18 (−3.74 to −0.62)	0.006
Warm nurturing	53.5 (11.3)	291	53.7 (11.2)	363	−0.54	−0.67 (−2.75 to 1.41)	0.53
Harsh discipline	38.9 (7.7)	291	40.5 (8.8)	363	−1.66	−1.83 (−3.12 to −0.55)	0.005
Maternal mental health:							
Depression	3.5 (5.2)	291	2.9 (4.0)	363	0.64	0.67 (−0.11 to 1.45)	0.09
Anxiety	2.0 (3.9)	291	1.9 (3.4)	363	0.06	0.08 (−0.58 to 0.73)	0.82
Stress	8.6 (6.3)	291	8.3 (5.9)	363	0.26	0.09 (−1.04 to 1.23)	0.87

Sample size for adjusted analyses at 18 months ranged from 258 to 261 in intervention arm and was 350 in control arm. Sample size for adjusted analyses at 24 months was 256 in intervention arm and ranged from 340 to 341 in control arm. Potential baseline confounders included child's sex, mother's education level, household income, socioeconomic disadvantage score, child's temperament status, and whether mother was depressed, anxious, or stressed.

WHAT IS ALREADY KNOWN ON THIS TOPIC

Behavioural problems affect up to 20% of children and have cumulative personal, societal, and economic ramifications

Prevention targeted to high risk families can be effective but has limited population reach and may stigmatise recipients

WHAT THIS STUDY ADDS

By age 24 months, a brief, universally offered parenting programme led to modest improvements in parenting risks known to contribute to child behavioural problems but did not improve maternal distress or toddlers' behaviour

Longer term follow-up is needed to determine effectiveness in preventing preschool behavioural problems

RESULTS

Of the 1069 eligible families, 840 expressed interest and 733 (69%) completed the baseline questionnaire. Non-participating families were more likely than participating families to have low index of disadvantage scores (mean 1033.7 (SD 74.6), range 825-1132, $P=0.03$), but sex of child was similar in participating and non-participating families. At 18 months, 299 (91%) intervention families and 373 (92%) control families returned their questionnaires; this fell to 293 (89%) and 363 (90%) at 24 months. All families returned at least one questionnaire.

Programme fidelity

The full programme was delivered for 95% of group sessions. In the intervention arm, 307 (93%) families attended the 8 month visit, 222 (67%) families attended a 12 month group, 185 (56%) attended a 15 month group, and 160 (49%) attended both groups. On average, the number of parents at each group session was seven (range 2-12).

Childhood behaviour

Compared with US externalising T score norms for 1-5 year olds (mean 50 (SD 10); 10% above clinical cut point), our sample of toddlers had slightly lower externalising problems at 18 months (mean 49.0 (SD 8.9); 4.5% above clinical cut point) and 24 months (49.5 (9.4); 6%). Internalising problems were also lower.

The mean (raw) externalising behaviour scores were similar in the intervention and control groups at 18 months (mean 12.1 (SD 6.9) *v* 11.9 (6.8); adjusted mean difference 0.16, 95% confidence interval -1.01 to 1.33; $P=0.79$) and 24 months (11.9 (7.2) *v* 12.9 (7.4); -0.79, -2.27 to 0.69; $P=0.30$). Mean internalising scores were also similar in the two groups at both 18 and 24 months (table).

Parenting

At 18 months, mean harsh discipline and unreasonable developmental expectations scores were similar in intervention families and control families. By 24 months, intervention mothers reported less harsh discipline and unreasonable expectations with their

toddlers than did control mothers. For the harsh discipline subscale, the adjusted mean difference of -1.83 (95% confidence interval -3.12 to -0.55; $P=0.005$) corresponds to an effect size of -0.22 (-0.38 to -0.07). For the unreasonable developmental expectations subscale, the adjusted mean difference of -2.18 (-3.74 to -0.62; $P=0.006$) corresponds to an effect size of -0.22 (-0.38 to -0.06). Mean scores for nurturing parenting were similar in the two groups at both 18 and 24 months (table).

Maternal mental health

The mean maternal depression, anxiety, and stress subscale scores were not markedly different between the two groups at either 18 or 24 months (table).

DISCUSSION

A universal parenting programme, designed to prevent early childhood behavioural problems, resulted in modest reductions in maternal report at 24 months of parenting risk factors known to predict such problems.^{2,5,6,8} The intervention did not lead to more nurturing parenting. The programme was acceptable to parents, was feasible in a routine primary care setting, and achieved greater reach than other reported programmes. However, we showed no significant impact on externalising behavioural problems in 2 year olds or on maternal mental health.

Strengths

The study had several strengths. Firstly, a 69% uptake on the basis of eligible birth records is high for population trials.²² Non-participants' index of disadvantage scores were only marginally lower than those of participants. Secondly, we used well validated parent reported outcome measures appropriate to this age group. Thirdly, all clusters and more than 85% of all families remained in the trial, strongly supporting both the validity of the findings and the acceptability of the approach.

Limitations

We included single source (maternal report) rather than multi-source assessment, and the results could thus be open to bias as mothers could not be blinded to their group membership. Higher risk families may have preferentially not participated in the trial. We do not know the extent to which the 31% of eligible families who did not join the trial were hard to reach, high risk families.

Although almost all families received some of the programme, only 49% received the full programme, underscoring the difficulty of implementing a true population prevention programme. We report here only short term outcomes, but interventions for externalising behaviour may have "sleeping" effects,²³ the detection of which would require longer term follow-up.²³

Meaning of the study

Previous prevention trials targeting existing behavioural problems reported parenting effect sizes ranging from 0.3 to 0.7. Our effect size on parenting behaviours of 0.2, although modest, is promising, given the brevity of this universal prevention programme that started in infancy before the onset of any behavioural difficulties.

In conclusion, the outcomes at 2 years are insufficient to support widespread introduction of a very early universal programme to prevent behavioural problems in toddlers. If additional, longer term benefits emerge by preschool age, such universal prevention could be considered as a component of population childhood mental health strategies.

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Competing interests: None declared.

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- 1 Sawyer MG, Arney FM, Baghurst PA, Clark JJ, Graetz BW, Kosky RJ, et al. *The mental health of young people in Australia*. Canberra ACT: Mental Health and Special Programs Branch, Commonwealth Department of Health and Aged Care, 2000.
- 2 Barlow J, Stewart-Brown S. Behaviour problems and group-based parent education programs. *J Dev Behav Pediatr* 2000;21:356-70.
- 3 Bor W, Najman JM, O'Callaghan GM, Williams GM, Anstey K. *Aggression and the development of delinquent behaviour in children*. Canberra, ACT: Australian Institute of Criminology, 2001. (Trends and issues in crime and criminal justice series, No 201.)
- 4 Campbell S. Behavior problems in preschool children: a review of recent research. *J Child Psychol Psychiatry* 1995;36:113-49.
- 5 Barlow J, Parsons J, Stewart-Brown S. Preventing emotional and behavioural problems: the effectiveness of parenting programmes for children less than three years of age. *Child Care Health Dev* 2005;31:33-42.
- 6 Sanders MR, Gooley S, Nicholson J. *Early intervention in conduct problems in children*. Adelaide, SA: Australian Early Intervention Network for Mental Health in Young People, 2000.

- 7 Carr A. *What works for children and adolescents? A critical review of psychological interventions with children, adolescents and their families*. London: Routledge, 2000.
- 8 Brenner V, Fox RA. Parental discipline and behaviour problems in young children. *J Genet Psychol* 1998;159:251-6.
- 9 Shaw DS, Dishion TJ, Supplee LH, Gardner F, Amds K. Randomised trial of a family-centered approach to the prevention of early conduct problems: 2-year effects of the family check-up in early childhood. *J Consult Clin Psychol* 2006;74:1-9.
- 10 Hutchings H, Gardner F, Bywater T, Daley D, Whitaker C, Jones K, et al. Parenting intervention in Sure Start services for children at risk of developing conduct disorder: pragmatic randomised controlled trial. *BMJ* 2007;334:678.
- 11 Morowska A, Sanders MR. Self-administered behavioral family intervention for parents of toddlers. Part 1: efficacy. *J Consult Clin Psychol* 2006;74:10-9.
- 12 Olds D, Henderson CR, Cole R, Eckenrode J, Kitzman H, Luckey D, et al. Long-term effects of nurse home visitation on children's criminal and antisocial behaviour: 15-year follow-up of a randomised controlled trial. *JAMA* 1998;280:1238-44.
- 13 Zubrick SR, Ward KA, Silburn SR, Lawrence D, Williams AA, Blair EM, et al. Prevention of child behaviour problems through universal implementation of a group behavioural family intervention. *Prev Sci* 2005;6:287-304.
- 14 Love JM, Kisker EE, Ross C, Raikes H, Constantine J, Boller K, et al. The effectiveness of early head start for 3-year-old children and their parents: lessons for policy and programs. *Dev Psychol* 2005;41:885-901.
- 15 Fergusson DM, Grant H, Horwood LJ, Ridder EM. Randomised trial of the early start program of home visitation. *Pediatrics* 2005;116:803-9.
- 16 Fergusson DM, Grant H, Horwood LJ, Ridder EM. Randomized trial of the early start program of home visitation: parent and family outcomes. *Pediatrics* 2006;117:781-6.
- 17 Department of Human Services. *Maternal and child health annual data report 2002-2003*. Melbourne, Victoria: State Government of Victoria, 2005.
- 18 Achenbach T, Rescorla L. *Child behavior checklist for ages 11/2-5*. Burlington VT: Achenbach System of Empirically Based Assessment, University of Vermont, 2000.
- 19 Lovibond PF, Lovibond SH. The structure of negative emotional states: comparison of the depression anxiety stress scales (DASS) with the Beck depression and anxiety inventories. *Behav Res Ther* 1995;33:335-43.
- 20 Sanson A, Oberklaid F, Pedlow R, Prior M. Risk indicators: assessment of infancy predictors of pre-school behavioural maladjustment. *J Child Psychol Psychiatry* 1991;32:609-26.
- 21 Australian Bureau of Statistics, Commonwealth of Australia. *Socio-economic indexes for areas*. Canberra ACT: ABS, 2001.
- 22 Bayer JK, Hiscock H, Morton-Allen E, Koukounne OU, Wake M. Prevention of mental health problems: rationale for a universal approach. *Arch Dis Child* 2007;92:34-8.
- 23 Tremblay RE, Nagin DS, Seguin JR, Zoccolillo MZ, Zelazo PD, Boivin MB, et al. Physical aggression during early childhood: trajectories and predictors. *Pediatrics* 2004;114:43-50.

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For sale: estate car

"I bought this car from another doctor at work." Doctors are still among the most trusted of professionals, and I congratulated myself on being able to gain the confidence of any prospective buyers by letting them know that not only was I a doctor, but so was the previous owner. I anticipated that my tactics would produce at least one potential purchaser, and sure enough someone telephoned and arranged to view the car the following evening.

However, as I drove home, I started to feel uneasy about having declared my profession in the advert. Was this to be simply a private sale between two individuals—in which case "caveat emptor"—or was I now bound by the GMC's *Good Medical Practice*, which states that "you must make sure that your conduct at all times justifies your patients' trust in you and the public's trust in the profession" and that

"you must be honest in financial and commercial dealings with employers, insurers and other organisations or individuals"? I couldn't see any let-out clauses about being off duty.

I decided I should answer any questions about the car's faults truthfully, and I did so, even to the point of volunteering such information. I felt at ease, and the buyer respected my honesty, and a deal was done. Despite my approach, I sold the car for £100 more than I had paid for it. I am hoping that anaesthetists don't read the *BMJ*, otherwise I expect I'll feel obliged to split the profits with the car's previous owner.

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