

What children's cortisol levels tell us about quality in child care centres.

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Abstract

The Australian child care profession has watched with some concern results of research coming out of North America indicating that child care is not good for children. This research identifies undesirable outcomes in children's development and behaviour as a result of child care attendance. How does this research apply to Australian children in Australian child care centres? Australian research is limited and this paper reports on results to date of an Australian study of children's biological stress levels (measured using salivary cortisol) and their relationship with quality child care service delivery. Results demonstrate clearly that children attending high quality child care have lower stress levels across the day than children attending satisfactory or unsatisfactory programmes. Poor quality child care is not good for children.

Stress and outcomes

Research has demonstrated over a number of years that stress impacts on long term outcomes for both children and adults. Chronic stress has been found to be associated with an impaired immune response (Padgett & Glaser, 2003) with the individual being prone to more frequent and more severe illnesses. Chronic stress is also associated with other health problems such as hypertension, and thus higher risks of heart attacks and strokes (Kunz-Ebrecht, Kirschbaum, & Steptoe, 2004), fibromyalgia, chronic fatigue syndrome and rheumatoid arthritis (Adam, 2003). Mental health consequences of chronic stress include depression (Luecken & Lemery, 2004) and Post Traumatic Stress Disorder (Young & Breslau, 2004). Memory problems (Abercrombie, Kalin, Thurow, Rosenkranz, & Davidson, 2003; Takahashi et al., 2004) behavioural and social problems are also identified as consequences of chronic stress (Adam, 2003).

Biomarkers of stress are becoming popular in research as effective, and relatively inexpensive methods for measuring stress (Gerhardt, 2004), with cortisol being particularly popular because of its ease of collection (via saliva), storage and analysis (Gunnar & White, 2001). Cortisol is secreted to enable the individual to respond to a threat (thus is triggered by fear or uncertainty). It's role is to mobilise components of the

system that facilitate a quick response to threat (such as alertness, increased breathing and heart rate) and minimise other body functions that are not essential to the immediate survival needs of the individual. Functions such as digestion, sexual behaviour, learning and rational thinking amongst others are shut down for the duration of the stress response (Adam, 2003; Gerhardt, 2004).

Cortisol levels in humans peak just after waking and decline across the day, with the lowest levels being reached around midnight (Adam, 2003). This pattern of cortisol change across the day is likely to be genetically programmed (Kunz-Ebrecht et al., 2004) and presumably evolved to ensure that humans were optimally responsive to their environment during the day when they were the most active. Whilst it is expected that this pattern of change across the day is achieved by approximately 3 months, there remains a wide variability throughout childhood (Gustafsson, Allansson, Gustafsson, & Nelson, 2004).

Normally cortisol, when it is released into the system, is quickly absorbed or bound onto receptors so its concentration in the body declines to normal levels. When stress is chronic, high levels of cortisol remain active in the system and this has significant biological consequences (Gerhardt, 2004). Firstly, chronically high levels of cortisol

damage the hippocampus which is partially responsible for shutting down the production of cortisol when the threat is removed. Thus damage impairs its ability to reduce cortisol so concentrations continue to increase leading to wide-spread neuronal damage (Monk & Nelson, 2002). High levels of cortisol also damage the amygdala which is also involved in the inhibition of cortisol production. Whilst the amygdala can be controlled by the pre-frontal cortex, neuronal damage there arising from high levels of cortisol impair its ability to manage the amygdala. Consequently, it becomes very difficult for the individual to reduce circulating levels of cortisol and these result in the long term health, mental health, social and behavioural consequences identified above.

High levels of stress in young children are particularly of concern because a range of developing systems are put at risk. For example, the development of neurotransmitters and the still growing pathways in the brain that use these are particularly at risk when exposed to high levels of cortisol (Gerhardt, 2004). Infants are not able to manage their stress alone and in the early years minimal levels of stress may result in high levels of cortisol. Infants are thus dependent on adults to regulate their stress levels. When this occurs satisfactorily, infants' biological stress management systems develop appropriately. For example, research demonstrates that children who are touched,

soothed and who receive responsive care have increased numbers of cortisol receptors in the hippocampus (Gerhardt, 2004). When children do not receive responsive care and their stress levels are not managed appropriately they experience chronic stress and the consequences (biologically, behaviourally, socially and in their health) as discussed above are likely to occur.

Thus a key factor in a quality care environment for young children is the ability of adults to manage children's stress levels. A high quality early childhood environment is one in which children's stress levels are low, and where adults are available to respond appropriately to stress reactions triggered (inevitably) by normal day-to-day events.

Stress and child care

Attending a child care centre, and the consequent separation from parents, is a significant stress trigger in the lives of many young children. Research supports this. For example, children in child care have higher levels of cortisol than children at home (Dettling, Gunnar, & Donzella, 1999; Tout, De Haan, Campbell, & Gunnar, 1998; Watamura, Donzella, Alwin, & Gunnar, 2003).

The cortisol child care research supports other research carried out over a number of years, in a range of different child care settings, reporting the negative consequences of child care attendance. For example children who attend child care for extended periods are found to be more aggressive and non-complaint (Belsky, 1988, 1991, 1999, 2001; Belsky & Rovine, 1988), have more behaviour problems at school, and have difficulties with academic adjustment (Harrison & Ungerer, 2000), peer relationships and social skills (National Institute on Child Health and Human Development Early Child Care Research Network, 2003a, 2003b; National Institute on Child Health and Human Development Early Child Care Research Network & Duncan, 2003). Children in poor quality child care are found to have insecure attachments which leaves them at risk for a range of long-term negative outcomes (Sagi, Koren-Karie, Gini, Ziv, & Joels, 2002).

However, research has also consistently identified different outcomes for children who attend high quality child care. Children in high quality care are found to be advantaged in social-emotional and cognitive-linguistic skills (National Institute on Child Health and Human Development Early Child Care Research Network, 2001). Many of the early childhood intervention programmes, characterised by high quality service delivery, reported a range of very positive outcomes for children including better academic,

behavioural and social skills (Schweinhart, Weikart, & Larner, 1986). Unintended outcomes were also extremely positive and included higher educational attainment, rates of employment, home ownership, and lower rates of offending behaviour, arrests and incarceration, dependency on welfare, teenage pregnancy and substance abuse (Peisner-Feinberg et al., 2000; Reynolds, Ou, & Topitzes, 2004; Schweinhart, Barnes, & Weikart, 1993; Schweinhart & Weikart, 1993). Cortisol research supports the difference in outcomes between high and low quality services, with children in high quality child care showing less elevation in cortisol across the day, and sometimes declines across the day, in comparison to children in low quality services (Dettling, Parker, Lane, Sebanc, & Gunnar, 2000).

The research into outcomes of child care and quality generally uses global measures of child care quality. For example, the Dettling et al study (2000) used the Observational Ratings of the Caregiving Environment. A range of studies have used the ECERS (for example Watamura et al., 2003).

However, we now know from cortisol research how important it is for adults to manage young children's stress levels and this must surely be a major influence of quality service delivery. Evidence is beginning to accumulate about the important role attachments play

in this process. Secure attachments between adult and child reduces children's cortisol reactivity and helps keep cortisol levels low (Gunnar, Larson, Hertzgaard, Harris, & Brodersen, 1992; Gunnar & White, 2001; Lamb, 1998). We know that warm, responsive care results in better performance on cognitive, language and behavioural tasks, and that adults who themselves are stressed are unable to offer warm, responsive care (Kim-Cohen, Moffitt, Caspi, & Taylor, 2004). We also from animal research that social support reduces stress levels and this same response is observed in humans (Heinrichs, Baumgartner, Kirschbaum, & Ehlert, 2003). Certainly it is clear that children who have insecure attachments are less able to cope in stressful situations (Braungart-Rieker, Garwood, Powers, & Wang, 2001).

Quality in child care

This evidence suggests that the relationship dimensions of quality care are very important (see also, for example, Elicker & Fortner-Wood, 1995; Honig, 1993; Kontos & Wilcox-Herzog, 1997; Manfield-Petit, 1993). Children who are securely attached to their caregivers in child care demonstrate more prosocial behaviours, peer play, empathy, independence and are more achievement oriented (Mardell, 1992). Relationship dimensions are identified as components of quality service delivery in the Quality

Improvement and Accreditation System run by the National Child Care Accreditation Council in Australia (National Childcare Accreditation Council, 2001a, 2001b). In addition, many of the QIAS principles not directly focusing on relationships help create contexts in which secure attachments can develop.

Research consistently identifies the importance of understanding the needs of each individual child, and providing support and encouragement appropriate for each child as fundamentally important in developing secure attachments between adult and child (Hutchins & Sims, 1999; Mardell, 1992, 1994). Children feel safe with adults who are responsive to their attempts at communication (this is often called attunement, Lally, 1995), who demonstrate respect for each child and family (Gonzalez-Mena & Widmeyer, 1993) and recognise the needs of children from different cultural backgrounds (Gonzalez-Mena, 1993). In addition to ethnic identity, it is important, when attempting to develop strong relationships with individual children, to address gender, social class and sexuality components of their identity (De Lair & Erwin, 2000). Through social referencing, children learn to trust and care for adults with whom their parents have positive relationships (Berk, 2002). That means that quality child care is characterised by strong and effective communication between staff and families (Hutchins & Sims, 1999).

Given that positive relationships are so important (relationships between caregivers and children and between caregivers and families) stability of staffing is required. Young children are particularly vulnerable when their caregiver changes (Howes, 1992). Strong relationships take time to build and can not easily occur when there are many and frequent changes of staff.

Extant research using biomarkers of stress has generally not been designed to specifically measure these components of child care quality and examine how they impact on child outcomes. This study was therefore designed to investigate the relational dimensions of quality and their impact on children's stress levels (and by implication, long term outcomes).

Methodology

Sample

A total of 16 centres from one city have participated in this ongoing study to date (15 community-based and 1 private). Centres were asked to participate based on their location (we attempted to obtain a cross-section of the different SES suburbs – purposive sampling). All children in each centre who met the selection criteria were

asked to participate in the study. The selection criteria were that the child attended for 3 days a week and had parental permission to participate. This paper reports on the data collected to date for the 3-6 year old children of whom there were 117 recruited. All the children were in the 'kindy' group (aged 3-5) in their centre. All centres had one kindy group, thus the children came from one of the 16 kindy groups in the 16 centres.

Measures

A subset of QIAS principles were selected to rate the quality of service delivery in each group. These principles were chosen because the indications in the literature (see review above) are that relationship dimensions, and dimensions relating to meeting individual needs are important factors in quality. The principles chosen are shown in Table 1.

Table 1: QIAS principles chosen to measure quality

Principle number	Descriptor
	Quality Area 1: Relationships with children 2 of 2 principles used in this study
1.1	Staff create a happy, engaging atmosphere and interact with children in a warm and friendly way
1.2	Staff guide children's behaviour in a positive way
	Quality area 2: Respect for children 3 of 4 principles used in this study

2.1	Staff initiate and maintain communication with children, and their communication conveys respect and promotes equity
2.2	Staff respect the diverse abilities and the social and cultural backgrounds of all children and accommodate the individual needs of each child
2.3	Staff treat children equitably
	Quality Area 3: Partnerships with families 1 of 3 principles used in this study
3.1	Staff and families use effective spoken and written communication to exchange information about individual children and about the centre
	Quality Area 4: Staff Interactions 1 of 1 principles used in this study
4.1	Staff communicate effectively with each other and function well as a team
	Quality Area 5: Planning and evaluation 2 of 4 principles used in this study
5.1	Programs reflect a clear statement of centre philosophy and a related set of broad centre goals
5.3	Programs cater for the needs, interests and abilities of all children in ways that assist children to be successful learners
	Quality Area 6: Learning and Development 1 of 6 principles used in this study
6.1	Programs encourage children to make choices and take on new challenges
	Quality Area 7: Protective care 3 of 4 principles used in this study
7.2	Staff supervise children at all times
7.3	Toileting and nappy changing procedures are positive experiences and meet each child's individual needs
7.4	Staff ensure that children are dressed appropriately for indoor and outdoor play and that rest/sleep time and dressing procedures encourage self help and meet individual needs for safety, rest and comfort

	Quality Area 8: Health No principles of 4 used in this study
	Quality Area 9: Safety No principles of 3 used in this study
	Quality Area 10: Managing to support quality 1 principle of 4 used in this study
10.2	Staffing policies and practices facilitate continuity of care for each child

Written observations were taken in each group attended by a study child. These observations were taken over the duration of the Research Assistant's time at the centre which ranged from a minimum of 5 to a maximum of 10 days depending on the number of children participating. These were then rated on the principles identified in Table 1 on a three-point scale (unsatisfactory, satisfactory and high quality) as defined in the QIAS documentation (National Childcare Accreditation Council, 2001a). Observations for 4 groups (25% of the sample groups) were given to a nationally trained validator to rate to check accuracy of the ratings. There was 100% agreement between the ratings made by the research team and the validator. Numbers of children in each of the three ratings (high quality, satisfactory and unsatisfactory) who have complete data sets (see explanation below) and were used in the analyses are shown in Table 2.

Table 2: Numbers of children in each quality rating

Principle	N of children in High quality groups	N of children in satisfactory quality groups	N of children in unsatisfactory groups	Total N of children with complete data sets for analysis
1.1	39	25	3	67
1.2	40	24	3	67
2.1	39	25	3	67
2.2	26	26	15	67
2.3	29	23	15	67
3.1	35	32	0	67
4.1	33	34	0	67
5.1	28	22	17	67
5.3	42	17	8	67
6.1	32	27	8	67
7.2	32	32	3	67
7.3	28	36	3	67
7.4	36	26	3	65
10.2	33	34	0	67

Cortisol data

Saliva was collected before morning and afternoon tea over three days in one week, not necessary consecutive days as this depended on when the child attended the centre.

Collection twice a day is the minimum recommended to identify changes in salivary cortisol over time (Gunnar & White, 2001). Collection over three days allows an average to be calculated (Dettling et al., 1999; Tout et al., 1998). In this study an average

morning and an average afternoon level was calculated for each child. Collection followed the procedure recommended by Gunnar and White (2001).

Procedure

Approvals were obtained from centre management (owner, management committee, co-ordinator as relevant) before caregivers were approached. Once caregiver permission was obtained, parents were approached via a letter sent home from the centre.

Collection only proceeded when all permissions were granted. Children for whom permission had been received, but who were reluctant to participate in saliva collection, were not pressured to do so, and those children with incomplete sets of data (that is those who did not have samples for three days) are excluded from further analysis. See Table 2 for numbers of children used in the analyses.

Analysis

Cortisol data were examined for normality: variance-covariance matrices and equality of error variances were also examined. Natural log transformations were applied to facilitate normality. A full explanation of the data screening is provided in Sims, Guilfoyle and Parry (in review) or can be obtained from the authors.

Split plot analyses of variance were undertaken for each principle to examine the impact of the levels of quality on changes in cortisol levels across the day. For the majority of the principles there were insufficient children in groups rated as unsatisfactory to include this quality level in the analyses (see Table 2). For Principles 2.1, 2.3 and 5.1 only were numbers sufficient to enable the unsatisfactory rating to be used in the analysis.

Results

Quality area 1: Relationships with children

Figure 1 demonstrates the changes in children's cortisol in the satisfactory and high quality groups for Principle 1.1 – the differences in responses were significant (F [1.58]=7.19, p =.010). In the high quality groups children's cortisol levels decreased in comparison to their levels in the satisfactory quality groups.

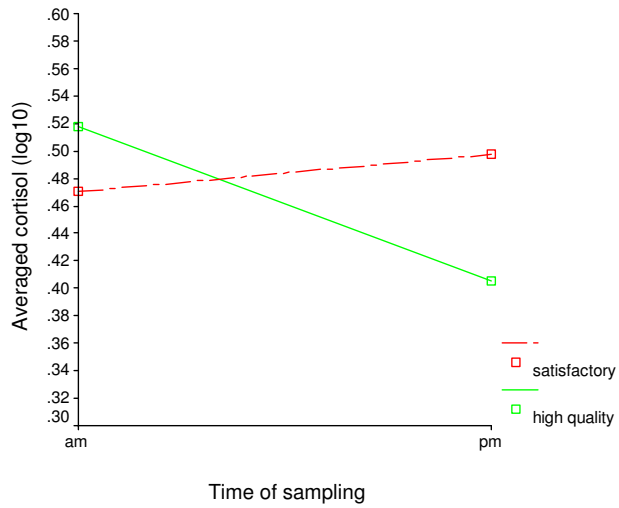


Figure 1. Graph of interaction between time of cortisol sampling (morning and afternoon) and rating of group for Principle 1.1:

Interact warmly.

A similar pattern is evident for Principle 1.2 and this was also significant ($F[1,35]=11.60$, $p=.002$) – see Figure 2.

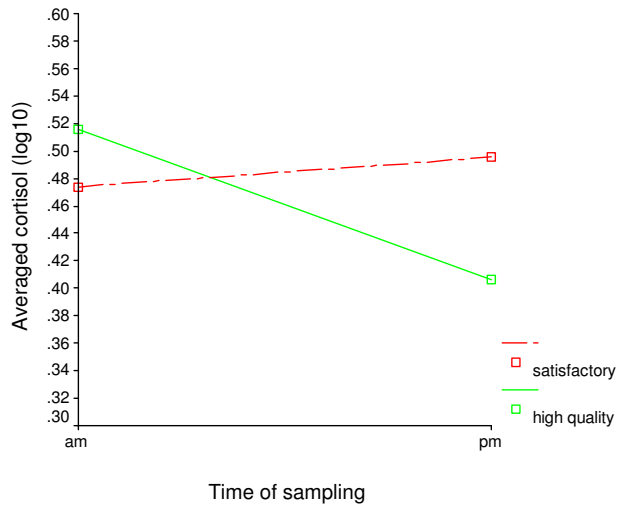


Figure 2. Graph of interaction between time of cortisol sampling (morning and afternoon) and rating of group for Principle 1.2: *Positive guidance.*

Quality Area 2: Respect for children

In a similar manner to that above, children in high quality groups for Principle 2.1 demonstrated a decline in cortisol whereas those in satisfactory groups did not. This effect was significant ($F[1,58]=7.19, p=.010$) – see Figure 3.

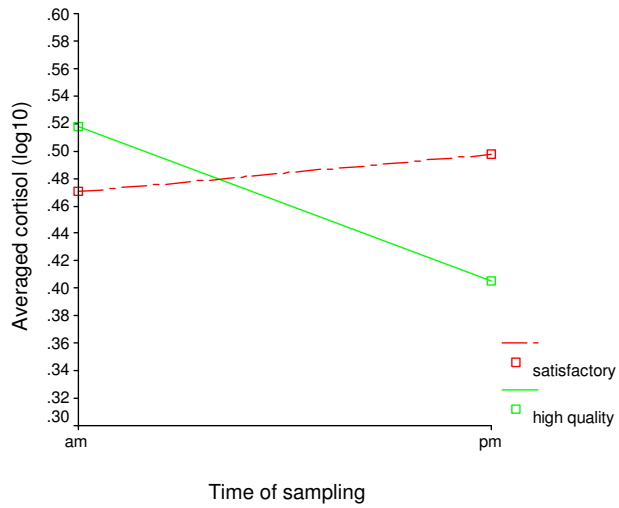


Figure 3. Graph of interaction between time of cortisol sampling (morning and afternoon) and rating of group for Principle 2.1: *Respect and equity*.

Principles 2.2 and 2.3 both had sufficient numbers in the unsatisfactory group to include this level of quality in the analysis. For both principles, children’s cortisol levels in the unsatisfactory groups went up, and in the satisfactory and high quality groups cortisol levels went down. This trend was significant in both cases (Principle 2.2 $F[2,60]=7.58$, $p=.001$ – see Figure 4 and Principle 2.3 $F[2,60]=7.5$, $p=.001$ – see Figure 5).

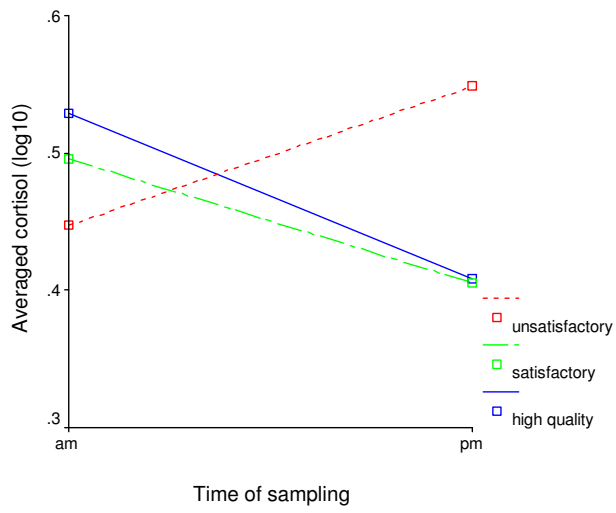


Figure 4. Graph of interaction between time of cortisol sampling (morning and afternoon) and rating of group for Principle 2.2: *individual needs*.

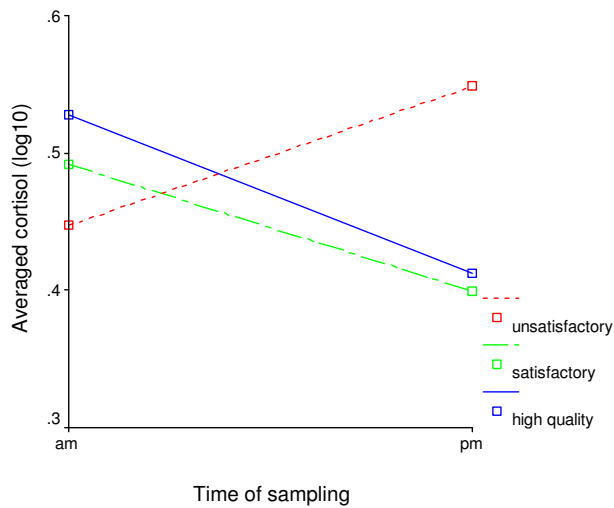


Figure 5. Graph of interaction between time of cortisol sampling (morning and afternoon) and rating of group for Principle 2.3: *Treat equitably*.

Quality Area 3: Partnerships with families

Children’s cortisol decreased across the day when they were in high quality groups for Principle 3.1 and this trend is not evident for children in satisfactory groups. This trend is significant ($F[1,61]=5.18, p=0.026$) – see Figure 6.

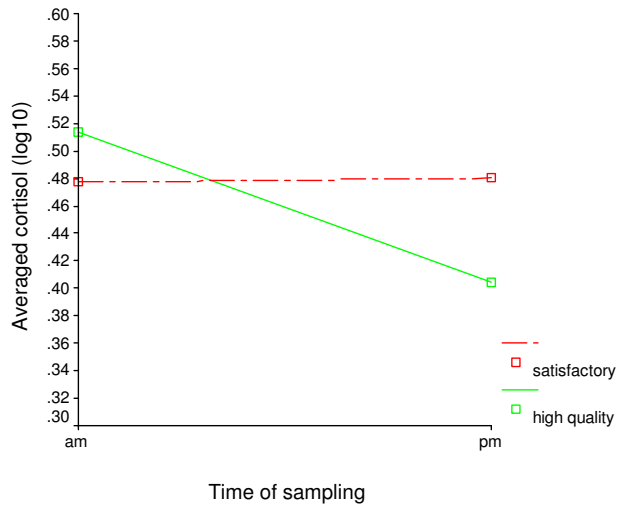


Figure 6. Graph of interaction between time of cortisol sampling (morning and afternoon) and rating of group for Principle 3.1: *family communication*.

Quality Area 4: Staff Interactions

There were no significant differences in children’s cortisol levels for Principle 4.1 between the high and satisfactory levels of quality – see Figure 7.

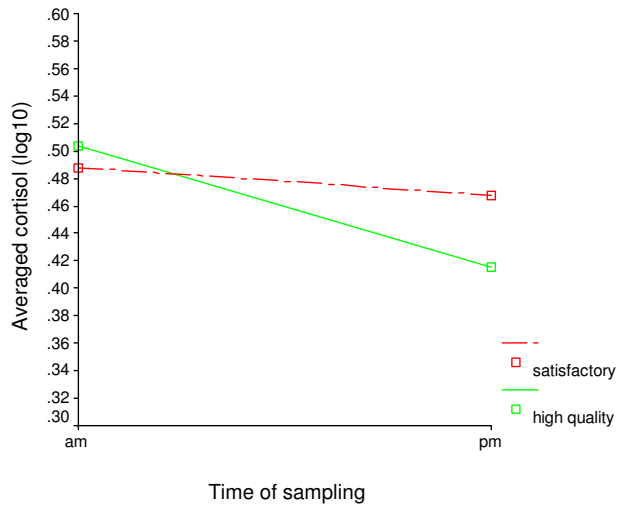


Figure 7. Graph of interaction between time of cortisol sampling (morning and afternoon) and rating of group for Principle 4.1: *Staff are a team*.

Quality Area 5: Planning and evaluation

For Principle 5.1 it was possible to include unsatisfactory in the quality analysis. Children attending unsatisfactory groups for this principle had higher cortisol levels than children in satisfactory or high quality groups. This difference was significant ($F[2,60]=7.12$, $p=.002$).

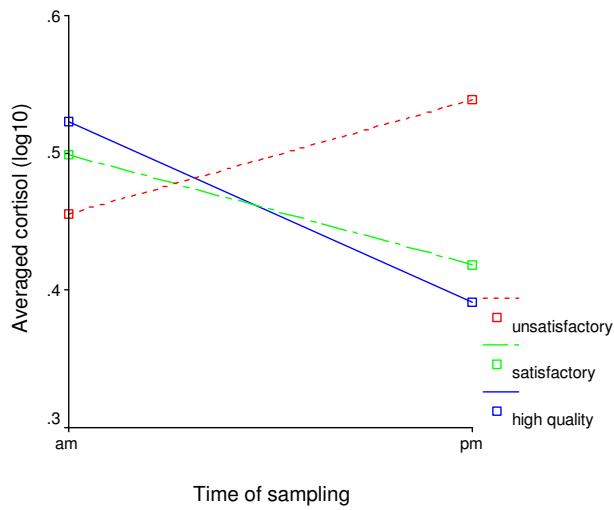


Figure 8: Graph of interaction between time of cortisol sampling (morning and afternoon) and rating of group for Principle 5.1: *Reflect philosophy*

For Principle 5.3, children in high quality rooms demonstrated a decrease in cortisol and children in satisfactory rooms showed no significant change in levels. This effect was significant ($F[1,54]=8.14, p=.006$) – see Figure 9.

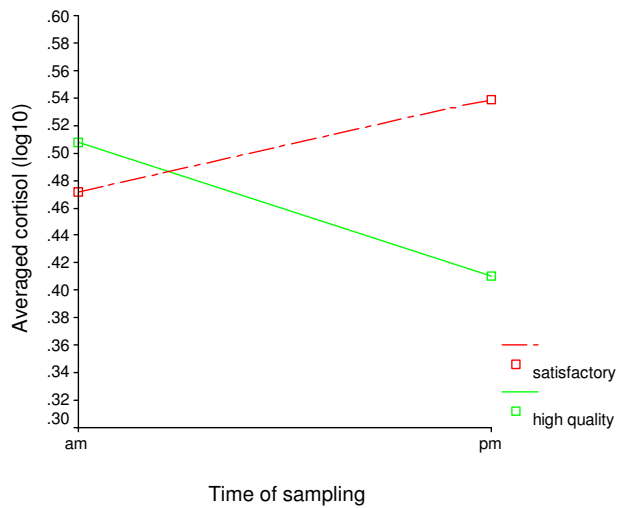


Figure 9. Graph of interaction between time of cortisol sampling (morning and afternoon) and rating of group for Principle 5.3: *Program for child needs.*

Quality Area 6: Learning and development

A similar pattern was found for Principle 6.1; children’s cortisol levels in high quality groups declined and those in satisfactory groups showed no change. This trend was significant ($F=[1,54], p=0.035$) - see Figure 10.

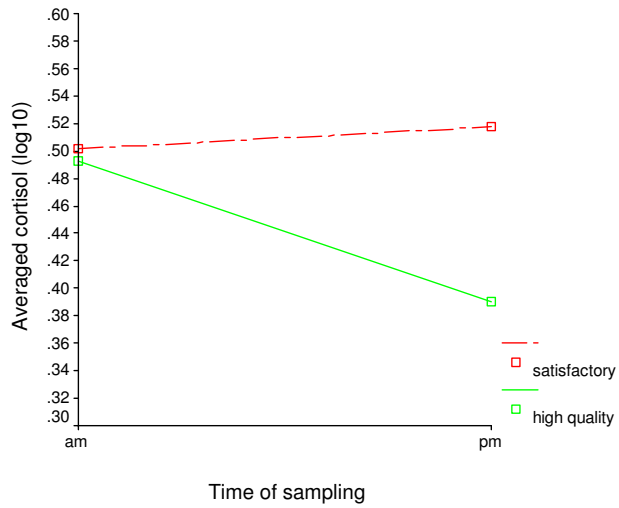


Figure 10: Graph of interaction between time of cortisol sampling (morning and afternoon) and rating of group for Principle 6.1: *Program for individual choices.*

Quality Area 7: Protective care

As above, there was a significant difference between children’s cortisol levels in high quality and satisfactory groups for Principle 7.2 – see Figure 11. This effect was significant ($F=[1,58]$, $p=0.035$)

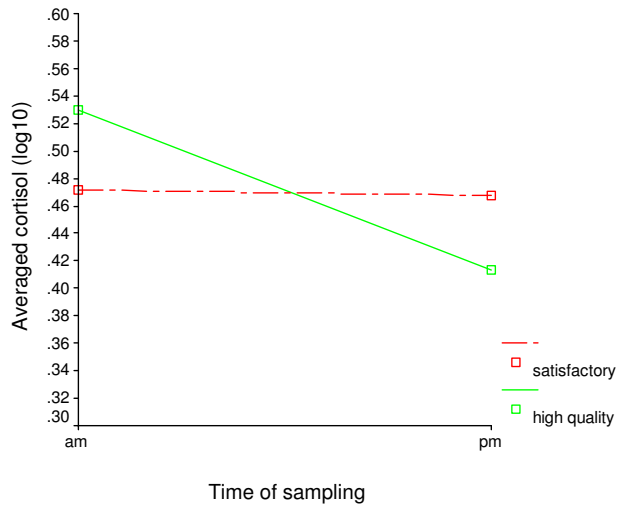


Figure 11: Graph of interaction between time of cortisol sampling (morning and afternoon) and rating of group for Principle 7.2: *Supervise at all times.*

Principle 7.3 showed the same patterns, with a significant interaction between time and quality ($F=[1,58]$, $p=0.023$). Cortisol levels declined in high quality groups but remained much the same in satisfactory groups – see Figure 12.

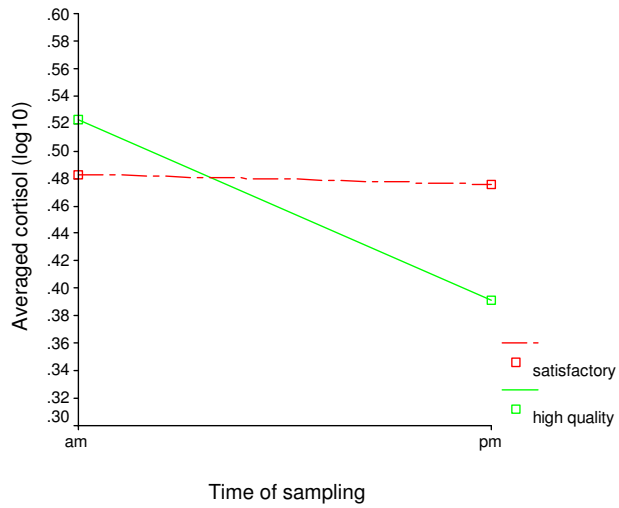


Figure 12: Graph of interaction between of time of cortisol sampling (morning and afternoon) and rating of group for Principle 7.2: *Toileting routines.*

There were no significant effects for Principle 7.4.

Quality Area 10: Managing for quality

Cortisol levels for children in high quality groups for Principle 10.2 showed a decline across the day whereas cortisol for those in satisfactory groups showed little change.

This effect was significant ($F=[1,61]$, $p=0.025$) – see Figure 13.

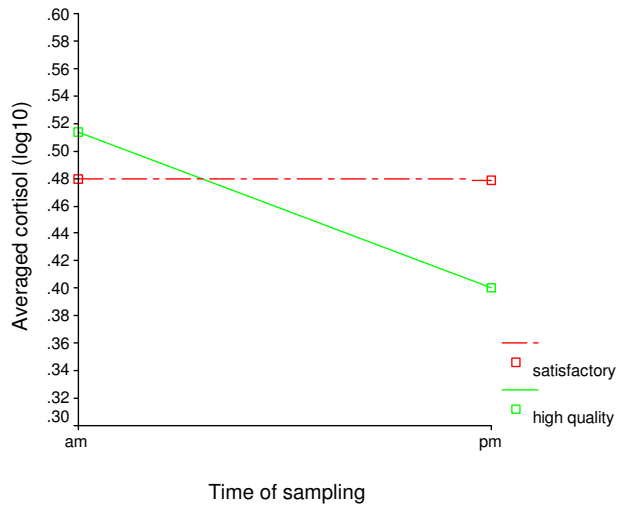


Figure 13: Graph of interaction between time of cortisol sampling (morning and afternoon) and rating of group for Principle 10.2: *Continuity of care.*

Discussion

Relationships are the most important dimension of high quality care

The majority of the principles chosen to measure quality demonstrated that higher levels of quality in service delivery relate to better cortisol outcomes for children. The principles (National Childcare Accreditation Council, 2001a) covered areas associated with relationships between caregivers and children (this includes treating children with

respect, developing relationships with families, ensuring programmes focus on children feeling safe and on meeting the individual needs of children) and management practices that ensure staff remain in their positions long enough to be able to develop and maintain relationships with children. All of these dimensions of quality are fundamental to developing and maintaining strong relationships between caregivers and children (Hutchins & Sims, 2000). This discussion will use levels of service delivery associated with lowering children's cortisol levels to identify aspects of quality child care service delivery.

Quality care that positively impacts on children's cortisol levels requires staff to consistently modify their approach to each child based on cultural background, temperament and competence. Siblings have opportunities to interact with each other during the day. Empathy and imagination are actively supported (Principle 1.1 – high quality indicators). Staff are aware of their own biases, attitudes and behaviours and reflect on their practice regularly. They encourage children to participate in decision-making, particularly around conflict management within the group (Principle 1.2 – high quality indicators).

Staff engage in conversations with children throughout the day and these are pleasant and frequent. They use appropriate conversation strategies for each child. Other children are encouraged to listen to peers and are encouraged to use alternative forms of interaction where this is relevant (Principle 2.1 – high quality indicators). Every effort is made to pronounce children’s names correctly, and to use key phrases from home languages. All children are encouraged to have positive attitudes to those from different cultural backgrounds and families are involved in helping staff understand, and meet, different cultural expectations in routines, conversations and experiences (Principle 2.2 – satisfactory indicators). Staff model respect and encourage children to treat each other with respect. Inclusive friendships are encouraged and children have opportunities to explore stereotypes, concepts of social justice and equity (Principle 2.3 – satisfactory indicators).

Families are involved in the centre, and information in other languages is available when necessary. Information is also communicated appropriately to families with low literacy levels. Staff use reflective listening with families and involve them in decisions about their child’s programme. The centre offers additional parent support materials such as videos, guest speakers and resource people (Principle 3.1 – high quality indicator).

When staff programme for children they have a clear idea of the long term outcomes towards which they are aiming. This means that they have a clear understanding of the centre philosophy and have participated in its development or review within the past year. This philosophy addresses current thinking in areas such as child development and inclusive services (Principle 5.1 – satisfactory indicators). Programmes not only demonstrate a sound understanding of children’s development but also reflect the needs and interests of each child. Children actively participate in planning play experiences and are able to choose play activities throughout the day, with opportunity to play alone, in small and large groups, and to move between play experiences as they wish (Principle 5.3 – high quality indicator).

Children feel safe in the child care environment and staff provide appropriate support so children can be challenged without fear. Children are encouraged to respond positively to the efforts of peers, and to support peers with differing skill levels (Principle 6.1 – high quality indicators). Staff ensure that children are supervised at all times and there is a plan in place to ensure that this happens, particularly when there are design factors that make effective supervision difficult. Supervision needs of individual children are factored into this plan (Principle 7.2 – high quality indicator). Included in this supervision is the

flexibility for children to use the toilet safely at any time during the day, and for younger children to undergo nappy changes when necessary. Hygiene levels are high and cases of cross-infection are monitored and addressed (Principle 7.3 – high quality).

The ability of caregivers to offer this level of quality is impaired when there is high staff turnover. Relationships between adults and children grow over time, and require a commitment not only from the caregivers themselves, but from the service. Services need strategies in place to promote long-term continuity of care and it is helpful when staff from similar cultural backgrounds to families are employed. A primary caregiver system ensures that caregivers are given responsibilities to develop relationships with particular children and families. Along with this, staff need to support the development of relationships between their children and families and other members of staff (Principle 10.2 – high quality indicators)

Where satisfactory performance is not good enough

For a number of the principles, cortisol results suggest that satisfactory performance is not good enough. In these areas, it is only when performance is at the high quality levels that children's cortisol levels demonstrate a decrease throughout the day. This applies to Principles 1.1, 1.2 (Quality Area: Relationships with children), 3.1 (Quality Area:

partnerships with families), 5.3 (Quality Area: Planning and evaluation), 6.1 (Quality Area: Learning and development), 7.2, 7.3 (Quality Area: Protective care) and 10.2 (Quality Area: Managing to support quality).

Based on these results, it would be useful for these principles to be examined with the possibility of changing the performance indicators to include a new level of performance for high quality, and the current high quality level to be identified as satisfactory. Current satisfactory levels need to be re-identified as unsatisfactory.

Implementation of the national accreditation system is claimed, by NCAC, to have made a major impact on quality of service delivery (National Childcare Accreditation Council, 2004) and improvements in service quality are ongoing. It is important to recognise, however, that caregivers' ability to continue improving is limited by current problems in the profession. Child care is a low status occupation, characterised by low wages and poor working conditions:

Most employers also acknowledge that staff can be required to work long hours in a reasonably stressful environment. It is understandable that very quickly many choose to move on to other occupations that offer better pay and/or better working conditions, including telemarketing, office work and cleaning work. (Health

Employees Superannuation Trust Australia, 2001, p19).

Minimum requirements for training are a two-year Diploma (Murray, 1997). Use of junior workers is common (Sims, 2002; Sims, Hutchins, & Dimovich, 2002). Unless there is national recognition of the importance of the early years, and the role child care plays for many families, these systemic issues are unlikely to change, and caregivers will only be placed under further stress as they are required to deliver practice at levels of quality beyond their training and in conditions that do not support their efforts.

Conclusion

Young children deserve the right to the best possible opportunities to learn and develop to their potential. In times of increasing economic pressure it is important that caregivers understand where it is important to focus their efforts to improve service delivery in ways that will have maximum impact on children's outcomes. It is also crucial that systemic changes are made so that all services operate in an environment where it is possible to expect more of caregivers, and realistic for them to deliver high quality services to young children and families.

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