Community Dent Oral Epidemiol 2008; 36: 425–433

COMMUNITY DENTISTRY AND ORAL EPIDEMIOLOGY

Nursing caries and buying time: an emerging theory of prolonged bottle feeding

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Freeman R, Stevens A. Nursing caries and buying time: an emerging theory of prolonged bottle feeding. Community Dent Oral Epidemiol 2008; 36: 425–433.

Abstract – *Background:* Nursing caries is considered to be problematic by dental health professionals. In their zealousness to solve the nursing caries problem dental health professionals forgot to ask the question: 'Why do mothers persist in prolonged bottle feeding?' *Aim:* To use grounded theory procedures and techniques to analyse the qualitative data obtained from mothers and to generate an emerging theory of prolonged bottle feeding. *Method:* A series of individual in-depth interviews were conducted with 34 mothers of children with nursing caries. The children were aged between 3 and 4 years. Data were analysed using the grounded theory procedures and techniques of open and selective coding. *Results:* The core category or the mothers' main concern that emerged from the data was conceptualized as 'buying time'. The feeding bottle bought time away from crying children by silencing them but also bought extra time with the child. Therefore, two different behavioural styles or categories of buying time emerged. These were: (i) to buy time away from the demands of their crying toddlers (instant solutions) and (ii) to buy extra time with their 'toddler-babies' (double-binding). The feeding bottle acted as an 'instant solution' as on seeing the bottle the child would instantly 'stop crying' and peace would reign. Double-binding described how the feeding bottle was used to buy extra time for 'babyhood closeness' between mother and child while exposing the mothers' harsh rejecting behaviours. *Discussion:* An understanding of the time concerns that the mothers experienced when caring for their young children and how they resolve them provides an important insight into the reasons for prolonged bottle feeding.

Key words: early childhood caries; preschool children; infant feeding; qualitative research

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Submitted 22 May 2007;
accepted 7 November 2007

There is a particular form of tooth decay that affects young children. It is called, early childhood caries or 'nursing caries' (1, 2). Developing rapidly on the upper incisors the primary cause of nursing caries is said to be milk. Although milk contains lactose, considered to be 'virtually noncariogenic' (3), milk can cause dental caries when taken from a feeding bottle and in contact with the teeth over a long period of time such as at night.

The preschool child with nursing caries is a child with a 'decayed smile'. When (s)he talks, smiles or laughs (s)he exposes her discoloured and broken teeth. The discomforts experienced by child and mother (4, 5) thus, become visually apparent to all. What makes the discomfort more acute and more disagreeable is that the cause of nursing caries is laid firmly on the laps of mothers. Mothers are blamed (6). It is the mothers' fault. For, it is the mother who prolongs bottle and/or breastfeeding long after the recommended times for the introduction of the drinking cup (7). The milk provided by mother to nurture her child results not in the promotion of health but in the destruction of her child's teeth. Consequentially, some mothers are stunned or deny the destructive effect of (*their*) milk upon their children's teeth while others find it an unbearable thought that their children have been 'hurt' by their nurturing.

It is of some surprise, therefore, that the research evidence suggests that mothers are aware of the

doi: 10.1111/j.1600-0528.2008.00425.x

causes of nursing caries (8–11) but nevertheless continue to bottle or breastfeed their children. Dentists working in North and West Belfast community clinics were intrigued to know why mothers continued to bottle feed despite being aware of the detrimental effects of prolonged bottle feeding.

This allowed a research question to be formulated – 'Why do mothers persist in prolonged bottle feeding?' The aim was to use grounded theory procedures and techniques to analyse the qualitative data obtained from mothers and to generate an emerging theory of prolonged bottle feeding.

Method

Grounded theory

Social research in the 1960s was focused on theory verification and was dominated by 'quantitative analysis methods'; in order to re-establish the place of theory generation within social research Glaser and Strauss devised grounded theory (12, 13). Grounded theory, as developed by Glaser and Strauss (12), uses a systematically applied set of methods to generate an inductive theory about a substantive or formal area. Grounded theory is a constant comparative method which in essence means that grounded theory involves collecting and analysing data contemporaneously. The goal is to generate a theory 'grounded' in the context in which the research is conducted. In any grounded theory study, whether the aim is to generate theory or simply analyse data, the research purpose is to clarify the main concern or problem of the participants and to find out how the participants resolve their concerns.

Central to finding out the main concerns of the participants is the process of data analysis known as coding. According to Charmaz (14):

> *'Coding is the pivotal link between collecting data and developing an emergent theory to explain these data. Through coding, you define what is happening in the data and begin to grapple with what it means.'*

There are at two major phases of coding, open coding and selective coding:

- Open coding consists of examining the data word by word, line by line and/or segment by segment. When interesting and/or thought provoking ideas occur, in relation to a particular incident, they are carefully and systematically catalogued onto memos. Each code is provided with a label or descriptor typically in the form of a gerund ('ing') which converts the open code label into a verb. Coding with gerunds, alerts and sensitizes the researcher to processes, actions and behaviours, from the perspective of the participants. Therefore, coding with gerunds allows the researcher to describe best the participants' meaning and behaviours which are then examined in relation to other incidents.
- Selective or focused coding allows the researcher to raise the level of abstraction and to categorize codes which are felt to have an importance beyond a simple description. It allows the analysis to go beyond the assessment of the manifest content of the data and to examine the latent or hidden context of the incident. This higher level of abstraction allows the conversion of the initial large number of codes, obtained from the opening coding, to a smaller more manageable set of abstract categories. The category therefore captures the variation in the data. The category must satisfy two criteria which are first: to describe the content of the data and secondly to explain the variation of the data. Thus, the researcher attempts to highlight and define the characteristics of the category by examining the situations in which it functions, when it changes and its relationship to other categories. This allows refinement and definition of the category. The analysis continues until all the properties and characteristics of the categories are defined and no new categories are discovered. Gradually it becomes apparent that 'saturation' of the categories has occurred (15). This is verified by trawling through the remainder of the data and rigorously looking for incidents which are not explained by the emerging theory. When there is little variation throughout the data this suggests that there is a stability and saturation of the categories. It now becomes possible to identify the core category. The core category accounts for most of the variations in the patterns of behaviour used by the participants to resolve their problems (12, 13) and provides the basis of an emerging theory.

The methodology of grounded theory, therefore, 'entails (i) the generation of substantive categories, (ii) creating definitions of and linkages between categories at different levels of abstraction and (iii) making constant comparisons between cases, instances and categories in order to explore fully the complexities of a data corpus' (16). Grounded theory, however, is also useful as a set of

techniques to analyse data in a qualitative study. The latter approach was applied to the work presented here.

The research context

Participants in this study lived in an area of North and West Belfast, Northern Ireland known as the Shankill Road. About 60% of the adult population residing in the 'Shankill' are economically inactive and 76% of births in 2004 were to single mothers (17). In terms of deprivation the 'Shankill' is one of the 10% most socially deprived areas of Northern Ireland (18).

Sampling and the participants

In qualitative data collection, the purpose is to identify a group of people who possess characteristics or lives relevant to the social phenomena being studied. Therefore, the nonprobabilistic sample procedure of purposive sampling was used. Purposive sampling was appropriate because the population being studied was unique and allowed the selection of all available mothers to participate (19). In addition, using purposive sampling meant that the participating mothers shared the experience of living in relative poverty and having a child with nursing caries. The mothers and children were sampled from local community clinics and toddler groups where the children's nursing caries had been diagnosed during routine dental examinations. All the mothers approached agreed to take part.

Ethical considerations

Ethical approval was obtained from the local ethical research committee (Approval number 242/02). Mothers were provided with a written information sheet and consent forms. Prior to obtaining written consent the mothers were encouraged to voice any queries with regard to participation (e.g. matters of confidentiality). When the mothers had reached a decision they were asked to complete the consent form and arrangements were made for an in-depth interview.

In-depth interviews

The researcher (AS) asked the mothers to talk about any subject they wished to, to refuse to pursue any topics they found disagreeable and to close the interview when they wanted to. Using an open question format (14) AS invited the mothers to speak. They were asked to focus on their children, the children's physical and psychological development as well as their own family life. For example, the mothers were asked such questions as, 'Tell me about what happened when she couldn't sleep?' Interesting comments were reflected back to assist the mothers to describe fully their thoughts, worries or concerns and in this situation AS inquired of the mothers, for example, 'Tell me what your thoughts and feelings were when you realized that the feeding bottle had caused the tooth decay?' As the interviews continued, AS deliberately wove in key points that had emerged from previous interviews. This allowed the refinement of existing categories and the emergent of new codes. For instance, some mothers stated that they felt possessive of their children but at the same time did not want their children to be completely dependent on them. Finally, AS used such questions as, 'Is there anything you'd like to ask me?' and 'Is there anything else you'd like to tell me to help me understand better?' to bring the conversation to a close.

The arranged interviews took place at a negotiated location away from the community clinics or toddler groups. Each of the in-depth interviews lasted up to 45 min. All interviews were audiotaped and transcribed at a later date. Saturation of the categories occurred after 34 interviews.

Data analysis

The intention was to use the procedures and techniques of grounded theory to discover why mothers persist in prolonged bottle feeding and in accordance with grounded theory to clarify their 'main concerns' and how they resolved the concerns. The grounded theory procedures and techniques followed in this study were those of open and selective coding.

As mentioned previously, open coding is the first stage of analysis. It involves the fracturing of the transcript of the first interview which is carefully examined line by line and word by word. The data is fractured by asking such simple questions as: 'What is the basis of this comment?'; 'What is going on here?'; 'What is this about?' This allowed the isolation of events or incidents (e.g. 'he never left my bed') and the labelling of codes with the researchers' (RF and AS) own words (e.g. 'babyhood closeness'). The second interview with the mothers was coded with first interview in mind and was constantly compared with it. All subsequent interviews were treated in the same manner with memos being written and being compared with all other memos from previous interviews.

Selective or focused coding was also used. With the emergence of more specific categories and the refinement of their properties, RF and AS were able to focus their attention on the meanings of the participants' behaviours and how they used their behaviours to resolve their main concerns. Gradually, the core category emerged from this higher level of abstraction. In other words how the participants resolved their concerns allowed for the emergence of a theory (the core category) grounded in the context of the setting of the research enquiry.

Results

After a description of the sample of mothers, the results section will describe the core category of 'buying time' followed by the two different categories or behavioural styles of buying time which were conceptualized as 'instant solutions' and 'double-binding'. The properties of the two categories which emerged from the data will also be presented.

Description of the mothers

Thirty-four mothers participated. The mothers' ages ranged from 23 to 40 years. The average age was 30 years (Table 1). The number of children in the families ranged from 1 to 7. Most of the children with nursing caries were either the first (n = 11) or second born (n = 13) child. The toddlers were 3–4 years old. Thirty children had been weaned. Three toddlers were still being bottle-fed and one child was still breast-fed on demand.

The core category: buying time

Gradually the mothers' unspoken concerns and difficulties in raising and caring for their children emerged. They described the need to find time for themselves while at the same time caring and being physically close to their children. The wish for time was of the greatest concern to the mothers. The core category or the mothers' main concern that emerged from the data was conceptualized as 'buying time'. The mother's provision and use of the feeding bottle at anytime of the day or night was conceptualized as 'the currency' the mothers used to purchase time. Hence, the mothers 'bought time' for themselves by giving the feeding bottle to their children to put in their children's mouth to 'shut the child up'.

Table 1. Demographic characteristics of the participating mothers

Demographic variable	
Age	
Mean age	30 years
Age range	23–40 years
Marital status	
Married or living with partner	29 (85%)
Single mother	5 (15%)
Employment status	
Full-time or part-time employment	4 (12%)
Economically inactive	30 (88%)

Buying time, conceptualized as a purchase, had its own distinct properties which were conceptualized as advantages or benefits and as disadvantages or costs. The benefits afforded by buying time (using the feeding bottle) was a welcome release from their demanding toddlers. The feeding bottle currency, also, had its own costs whether in visible payments (such as, the child's tooth decay) or as hidden prices, such as family arguments and tensions:

> *'My Jimmy, he couldn't stand the child squealing and crying at night. We hadn't slept for weeks and Jimmy and me were fighting like and Jimmy's shouting at me like; 'For flip sake give that child a bottle, I can't be doing without sleep'. So I did, the child sleeps, no longer screams the house down at night. Me and Jimmy we're OK.' (Mother 16)*

Buying time: different behaviours and different styles

A variation in the types of behaviours or behavioural styles that, the mothers used to buy time, gradually emerged. The different behaviours which emerged were firstly, the mothers' use of the feeding bottle to buy time *away* from their demanding toddlers and secondly, the mothers' use of the feeding bottle to buy time *with* their 'toddler-babies'.

The feeding bottle purchased time *away* from the toddlers and afforded the mothers some 'peace and quiet'. One mother had been advised for her son to drink more fluids and so she had encouraged the boy to walk about with the bottle of milk in his mouth. This not only fulfilled the doctor's instructions but also her wish for time away from her son's crying. With the bottle in his mouth her son was silenced.

The feeding bottle also allowed the purchase of buying time *with* the toddler while retaining the child in a 'toddler-baby' state. With the feeding bottle in position, the child's and mother's emo-

tional needs for closeness were satisfied. The following quote, from a young single mother, whose son was nearly 4 years of age, is illustrative:

> *'The bottle is really a comfort. At night, he just holds onto the bottle and I have him in my arms. I keep him there until he goes to sleep and I look at him and I think he's still my wee baby.' (Mother 6)*

Because of this variation in the mothers' behaviours when buying time, two behavioural styles or categories of buying time emerged. These were conceptualized as 'instant solutions' and 'double-binding'.

Category 1: instant solutions

The giving of the feeding bottle with milk was perceived as an 'instant solution' for buying time away from their crying children. The mothers described their lives as a rubric of anarchy and chaos. They reported that their children would, 'Lie on the ground and yell', 'constantly cry and squeal' and 'play up like a mad man squealing, jumping and throwing things'. On seeing the bottle the child would instantly 'stop crying and squealing' – peace would enter the household. At night mothers talked about the children 'having the whole house up' and 'crying all night until (they) got a drink'. In such situations the mothers perceived that they needed an 'instant solution' as one mother stated:

> *'I can't stick the screaming at night. The only way to get him over (to sleep) is to give him a bottle of milk.' (Mother 10)*

Additional costs and desperate solutions—As soon as the mothers had found their 'instant solution' – the feeding bottle – the children became resistant and returned to their unpredictable and chaotic activities. The chaos that pervaded the household was a reflection of the mother's need for time to herself. The mothers' solution was to follow the toddler and not to impose any boundaries or instigate behavioural routines. Mothers stated that at times their home life descended into chaos – 'Its like a madhouse', while, others recognized the relentless disorder of their lives which was riddled with confusion and disharmony. A mother talking about her 3-year-old son is illustrative:

> *'I don't understand it just after we got him settled with the bottle and we thought that's that one sorted – what happens – now he won't go to bed he stays up until 11.30 pm and will only go to bed when we go to bed and then he has to sleep with us.' (Mother 25)*

Mothers had to find additional strategies to counter their children's increasingly disruptive behaviours. The result was an additional payment for buying time. The description of the additional costs mothers used to buy time was conceptualized as 'desperate solutions'. Mothers, recognizing that they were in debt, used desperate remedies to pay for some quiet time for themselves:

> *'It's the same each evening – but is all a bit chaotic for me – I start her in her own bed and its tiring on me up and down in the night and then I just let her come into my bed with her milk.' (Mother 32)*

In finding themselves on the receiving end of ever unaffordable and increasing costs the mothers found desperate solutions to pay for their wish for peace and quiet – they let their toddlers run around with the bottle in their hand or in their mouths while other mothers allowed their toddlers to stay up late and to fall over to sleep were they lay:

> *'He won't go down to sleep. He goes to sleep on the settee and we take him up to bed when we go.' (Mother 26)*

The subsequent disintegration of structured family mealtimes followed as mothers became evermore concentrated on solutions for their toddlers' disruptive behaviours. Other family members suffered. Older children had to fend for themselves and the shift from structured family meals to unstructured in-between meal snacking was gradually adopted. Without mealtimes or bedtime routines, children eating when they were hungry and sleeping when they were tired, the mothers 'paid a high price for peace and quiet'.

Psychological costs—The result of the mothers' spiralling costs resulted in a household where the child appeared to be in charge. This perception belied the mothers' true feelings. They were at their 'wits' end' and feared they could not adequately care for their children. The verbalization of this anxiety allowed further psychological costs to be added to the instant solution payment for buying time – guilt and shame. Tooth extractions, the child's difficulties in smiling, speaking and eating were constant reminders that the mothers were to blame:

> *'I couldn't be with him the whole time, I had to do some work – I needed time away, so I let him have his bottle.' (Mother 13)*

As anxiety gave way to shame the mothers experienced a further charge – they became

self-reproachful and questioned their mothering and nurturing roles. One mother talked anxiously about her three children and the youngest that had been a result of an unplanned pregnancy. She had little time for this youngest child and complained that he was 'always so unsettled', 'never slept' and so the only way was to give him the feeding bottle. She had wished 'to be able to manage' and admitted shamefully that she feared that the truth would come out – 'I never wanted a third child'.

Category 2: double-binding

The wish to buy extra time with their children landed the mothers in the classic double-bind situation. The double-bind situation may be thought of in terms of behaving in apparently conflicting ways. Double-binding conceptualizes all the contradictory and conflicting aspects of the relationship between mother and child (20). The mothers in this study played two conflicting parts in their purchase of extra time with their 'toddler-baby' – the 'possessive babying mother' who wished for ever-increasing 'babyhood closeness' with her 'toddler-baby' and the 'rejecting inconsistent mother' who wished for an 'independent child'. Consequently, the mothers found themselves trapped in a jumble of conflicting demands – on the one hand the mothers acted to maintain and retain the 'babyhood closeness' with their toddlers but on the other hand the mothers' harsh rejecting behaviours betrayed their wish for their children to 'get lost'.

Nothing illustrated the mothers' double-bind better than the toddlers' demands to sleep in their parents' bed. At night with the child in bed beside them, the mothers had extra time comforting and cuddling their 'toddler-babies'. But the wish that the toddler would be more independent, and 'sleep in (their) own bed', was aroused when mothers needed 'an undisturbed night's sleep' or wished for intimacy with their partners:

> *'Meg panics at night and gets into bed with us. I hold her and after a cuddle she settles down. There's only one problem – it always seems to happen when her father and me get cosy together – then I would like her to sleep in her own room – be a bit more independent.' (Mother 19)*

It became possible to propose that the properties of double-binding were 'possessive baby mothering' and 'rejecting inconsistent mothering'.

Possessive baby mothering—In general the mothers were possessive of their children. The mothers admitted to being unable to 'let (them) go' and wished to 'have (them) as a baby' irrespective of the dental, physical or emotional consequences. The mothers encouraged the child's dependency through the currency of the feeding bottle. The mothers believed that, as women, they benefited by prolonging their child's time in babyhood. They described their longing to be needed and the delight of being wanted by their children. One mother, describing her longing for a child, recognized that at all costs she had kept her child on the breast for her own emotional needs. Breastfeeding had only stopped when her son, nearly 4 years old, started school:

> *'He started school and then I gave him time to get settled and then I stopped breast feeding him.' (Mother 29)*

An additional benefit was that at last, the mothers had a purpose in life. They felt they had something that they had 'made' and had 'something of their own'. The following is illustrative; a mother of a 14-month-old toddler refused to wean her daughter as she felt her child was too young and still needed her bottle. The mother was adamant even when the consequences of prolonged bottle feeding were explained. This mother stated that she was not ready to 'let her child go' and she wanted to continue to baby her toddler. The mother believed she was the only one who was intuitively sensitive enough to tune into her 'baby's' communications. She believed that she alone could provide the necessary security by gratifying her child's every need as they occurred – particularly at night when her daughter became distressed and frightened. For the mothers living on the 'Shankill' their children were a long-awaited prize – the 'best thing to happen' in their lives.

Considering the benefits of possessive baby mothering it was of little surprise that the mothers were unable to separate from their children. They clung to their children and the children in return clung to the feeding bottle as they clung to mother:

> *'She's 3 and she won't go anywhere without her bottle. She nurses it and rocks it – even when its empty.' (Mother 28)*

Rejecting inconsistent mother—But the mothers also wanted their children to be less needy, more independent and less burdensome. In this part of

the double-bind the mothers played the part of the rejecting inconsistent mother. Mothers admitted to coldly rejecting their children's emotional advances, scolding the children for being too clingy and too demanding and 'behaving just like a baby'. This maternal attitude was most discernable when the children were scolded for not being 'grown-up' and not speaking or eating properly:

> *'She can't do normal things because there are no teeth – there are words but you can't understand what she is saying!' (Mother 17)*
> *I've tried everything with my wee fellow to get him to eat. I say to him, 'Here's a banana'. He won't take it. Then he's crying and squealing. All he wants is his bottle.' (Mother 5)*

As the mothers inconsistently rejected their children, the children experienced more separation anxieties and attachment difficulties (21, 22). One mother reported her fury and embarrassment when her daughter screamed, cried and clung to her, when left at nursery school. Other mothers, recognized their children's distress, but still blamed the children for their difficulties in being separated from them. The result of rejecting inconsistent mothering was that a communication disconnection occurred – mothers not hearing their children's needs and children bombarded their mothers with 'screaming' in an attempt to gain attention and love (22).

Past times—It emerged that much of the content of the mothers' descriptions of their lives and interactions with their children belonged to their own childhood. Some mothers talked of being 'told off' for disturbing the house, being shouted at to 'go to sleep' and being physically chastized by their own mothers. Others described fights over food and one remembered being humiliated, by her own mother, when at the age of 6 she still sucked her pacifier at school. Despite these disagreeable memories, the mothers also remembered their own mothers as kindly and loving who had cared for them in a considerate way. The prolonged use of the feeding bottle appeared to re-energized memories of their own mothers. It may be postulated, therefore that an additional property of double-binding was the purchase of 'past times'. With the purchase of 'past times', the mothers re-enacted their own childhood experiences with their own children while reviving childhood memories and experiences of being possessively babied (the benefits) while being inconsistently rejected (the costs).

Discussion

The issue of nursing caries is perplexing and problematic for dental health professionals. In their attempts to solve the nursing caries problem they have embarked on health education programmes to get mothers to change their bottle feeding behaviours. When this failed, mothers were blamed for misunderstanding the 'prolonged effect of exposure to sugared drinks in feeding bottles' (11). The mothers' improved knowledge was disregarded. Therefore the question remained: 'Why do mothers persist in prolonged bottle feeding?' The aim was to use grounded theory procedures and techniques to analyse the qualitative data obtained from mothers and to generate an emerging theory of prolonged bottle feeding.

The mothers' main concern was for time and the feeding bottle, placed in the child's mouth, allowed time to be bought – hence the prolonged use of the feeding bottle was conceptualized as 'buying time'. Conceptualizing the feeding bottle as a means of buying time allowed RF and AS to understand how the feeding bottle was used in the lives of the mothers and their children. What was essential for the mothers was time for themselves away from their demanding children while keeping their children physically close in a 'toddler-baby' state. The feeding bottle currency allowed them to purchase both time away from their demanding children and extra time with their 'toddler-baby'.

The benefits of the feeding bottle as an instant solution to household woes included an easier life for parents, relatively undisturbed sleep, less stress and tension in the household. The feeding bottle as an instant solution had the quality of a 'cure-all' for as soon as the feeding bottle 'medicine' appeared the child's disruptive behaviours disappeared. The instant solution strategy was thus perceived as an excellent way of buying quiet time during the day and undisturbed sleep at night. But the children became increasingly resistant to the feeding bottle panacea and so reverted or acquired evermore disturbing behaviours. The mothers in an attempt to resolve their time concerns used evermore desperate solutions which further resulted in the mothers' anxieties and fears that they could not manage to care for their children.

It is proposed that the category of double-binding reflected maternal fears that they did not have enough time with and for their children. The mothers, therefore, prolonged their child's time in babyhood believing that this would benefit their

children. Raphael-Leff (23) has conceptualized these observations in terms of maternal gratification and the benefits of motherhood. However for these mothers, the benefits of motherhood also had the potential to hinder their child's psychosocial development and it may be proposed that the children's apparent slow progression to toddlerhood and independence was perceived by mothers as burdensome.

At first glance, it seemed that the mothers were unable to allow their children to separate from them and progress to developing relationships outside the mother–child dyad (22). However, this ignored the fact that many children nursed their bottles as their mothers nursed them. This observation suggested that the toddlers had progressed to a stage of psychosocial development in which the feeding bottle had acquired the qualities of a transitional object (24). For Winnicott (24) the use of a transitional object (e.g. the comfort blanket) represents the child's gradual emergence from the exclusivity and dependence upon the mother to separation and independence. The mothers in their prolonged use of the feeding bottle had created elements of 'good-enough mothering'. The feeding bottle as a transitional object allowed the child to develop a gradual sense of control, autonomy and independence while still being emotionally connected to the mother by means of the feeding bottle. Therefore, despite the mothers' fears and anxieties concerning their parenting skills, they had created a 'good-enough mothering' environment which had allowed the feeding bottle to act as a transitional object (21, 24).

While the grounded theory techniques and procedures used in this study restricted theory generation, it would not be true to conclude that this work represents a simple qualitative exploration of maternal views, rather it represents an emerging grounded theory since the core category 'buying time' emerged from the data. The feeding bottle was at once an instant solution for buying time away from screaming and crying children while providing a vehicle for double-binding which prolonged the time of their children in a more baby-like state. Therefore, what emerged was an appreciation of the time concerns, which the mothers experienced when caring for their children together with their attempts at resolution. Time concerns and fears of disturbed mothering and poor parenting provided important insights into why the mothers persisted in prolonged bottle feeding.

What are the implications of this emerging theory of prolonged bottle feeding for health promotion? In order to identify the implications of this research it is necessary to consider the theoretical perspectives which inform the discourse within health promotion. The first theoretical perspective is the 'conventional discourse' or 'the top-down approach', in which, the individuals' lifestyle changes are the cornerstone of illness prevention. The second theoretical perspective is the 'radical discourse' or 'the bottom-up approach'. The radical discourse places social inclusion, 'community empowerment and advocacy' (25) as pivotal in the promotion and maintenance of health. For Laverack (26) what is fundamental in the radical discourse is the achievement of community empowerment. Community empowerment is achieved, according to Laverack (26), through the individual's empowerment which is attained, in the first instance by appreciating people's concerns. Hence understanding the complexity of the concerns experienced by people paves the way for personal action to small group involvement and community empowerment – in essence a strategic approach to health promotion (25, 26). The work presented here aligns itself with the radical discourse and provides a first step in a strategic approach to health promotion through the understanding of maternal concerns and the complexities of behaviours which underpin the prolonged use of the feeding bottle.

Nevertheless, what is the place of lifestyle changes within the radical discourse? While acknowledging that a conflict may exist, between radical and conventional theoretical perspectives, the need for parents and their children to modify their health behaviours is of central importance – the question is how can this behaviour modification may be achieved? It is proposed that by marrying the twin approaches contained within the conventional and radical discourses it is possible to develop appropriate and acceptable health promotion programmes. Hence health promotion programmes that start by understanding maternal concerns which, underpin prolonged bottle feeding, provide an opportunity to incorporate the more conventional elements of health promotion – such as the common risk factor agenda (27) into the radical discourse. Adopting a common risk factor agenda in which there is true integration of oral health nutrition strategies into parenting programmes will allow such issues as separation anxiety, attachment and child develop-

ment to be discussed in relation to feeding and sleeping difficulties – thus assisting mothers to resolve their time and parenting concerns. Therefore, the child presenting with nursing caries may reflect a child and mother in need of help. By assisting mothers to overcome their time concerns, mothering anxieties and fears when caring for their infants, toddlers and children may provide the avenue not only for the prevention of nursing caries but also the promotion of 'good-enough mothering' (21, 24).

Acknowledgements

DHSRU is core funded by the Chief Scientist Office of the Scottish Executive and is part of the MRC Health Services Research Collaboration. This paper expresses the authors' views which are not necessarily shared by the Scottish Government.

References

1. Ismail AI, Sohn W. A systematic review of clinical diagnostic criteria of early childhood caries. J Public Health Dent 1999;59:171–91.
2. Milnes A. Description and epidemiology of nursing caries. J Public Health Dent 1996;56:38–50.
3. Committee on Medical Aspects of Food Policy. Dietary sugars and human disease. Report on the panel on dietary sugars of the committee on medical aspects of food policy. London: HMSO; 1989.
4. Ramos-Gomez F, Tomar S, Ellison J, Artiga N, Sintes J, Vicuna G, et al. Assessment of early childhood caries and dietary habits in a population of migrant Hispanic children in Stockton, California. ASDC J Dent Child 1999;66:395–406.
5. Ramos-Gomez F, Weintraub J, Gansky S, Hoover C, Featherstone J. Bacterial, behavioral and environmental factors associated with early childhood caries. J Clin Pediatr Dent 2002;26:165–73.
6. Muller N. Nursing-bottle syndrome: risk factors. ASDC J Dent Child 1996;63:42–50.
7. Hallett K, O'Rourke P. Early childhood caries and infant feeding practice. Community Dent Health 2002;19:237–42.
8. Weinstein P. Public health issues in early childhood caries. Community Dent Oral Epidemiol 1998;26(Suppl 1):84–90.
9. Finlayson T, Siefert K, Ismail A, Delva J, Sohn W. Reliability and validity of brief measures of oral health-related knowledge, fatalism, and self-efficacy in mothers of African American children. Pediatr Dent 2005;27:422–8.
10. Hood C, Hunter M, Kingdon A. Demographic characteristics, oral health knowledge and practices of mothers of children aged 5 years and under referred for extraction of teeth under general anaesthesia. Int J Paediatr Dent 1998;8:131–6.
11. Chestnutt I, Murdoch C, Robson K. Parents and carers' choice of drinks for infants and toddlers, in areas of social and economic disadvantage. Community Dent Health 2003;20:139–45.
12. Glaser BG, Strauss AL. The discovery of grounded theory. London: Weidenfeld & Nicolson; 1969.
13. Glaser B. Doing grounded theory: issues and discussions. Mill Valley, CA: Sociological Press; 1998.
14. Charmaz K. Conducting grounded theory. A practical guide through qualitative analysis. London: Sage Publications; 2006.
15. Murphy E, Dingwall R, Greatbatch D, Parker S, Watson P. Qualitative research methods in health technology assessment: a review of the literature. Health Technol Assess 1998;2, No. 16.
16. Freeman R, Ekins R, Oliver M. Doing best for children: an emerging grounded theory of parents' policing strategies to regulate between meal snacking. Ground Theory Rev 2005;4:59–80.
17. NISRA (Northern Ireland Neighbourhood Information Service). Available from: http://www.ninis.nisra.gov.uk/ (accessed 14 May 2007).
18. NISRA. Northern Ireland multiple deprivation measure, 2005. Belfast: Northern Ireland Statistics and Research Agency; 2005.
19. Willig C. Introducing qualitative research in psychology. Adventures in theory and method. Buckingham: Open University; 2003.
20. Lutz K, Curry M, Robrecht L, Libbus M, Bullock L. Double binding, abusive intimate partner relationships, and pregnancy. Can J Nurs Res 2006;38:118–34.
21. Fonaghy P. Attachment theory and psychoanalysis. New York: Other Press; 2001.
22. Dumas J, LaFreniere P, Serketich W. ''Balance of power'': a transactional analysis of control in mother–child dyads involving socially competent, aggressive, and anxious children. J Abnorm Psychol 1995;104:104–13.
23. Raphael-Leff J. Facilitators and regulators: conscious and unconscious processes in pregnancy and early motherhood. Br J Med Psycho 1986;59:43–55.
24. Winnicott D. Transitional objects and transitional phenomena; a study of the first not-me possession. Int J Psychoanal 1953;43:89–97.
25. Laverack G, Labonte R. A planning framework for community empowerment goals within health promotion. Health Policy Plan 2000;15:255–62.
26. Laverack G. Health promotion practice: power and empowerment. London: Sage Publications; 2004.
27. Sheiham A, Watt RG. The common risk factor approach: a rational basis for promoting oral health. Community Dent Oral Epidemiol 2000;28:399–406.