Living with lifting: Mothers' perceptions of lifting and back strain in childcare

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ABSTRACT: *The methods a mother selects to physically care for her young children may subject her to back strain or injury depending on the methods she selects. Little is known about what motivates mothers to select particular childcare methods and equipment. The aim of this qualitative study was to explore the choices mothers of young children make in this area and their experiences using the methods they select. Nine mothers completed a brief questionnaire and participated in a semi-structured interview. Analysis of the data revealed a number of motivating factors that were considered before making a final decision on what method to use. Rarely were issues related to posture and back care considered. Primarily, mothers chose methods based on what was best for the child, without consideration of their own needs. Consideration of the effect of a method on their back was given only when they experienced back strain. Further research is required to investigate the best methods for lifting and handling young children while providing maximum protection for the mothers' backs.*

Key words: lifting, childcare, back strain, mothers.

Introduction

As a child is dependent on its mother for all of its basic needs, a mother's role will include tasks such as dressing and changing, feeding, bathing, transporting and providing activities to entertain the child. While mothers carry out their everyday routines they are at risk of injuring their backs as they lift children on and off various surfaces such as highchairs and change tables. The lifting demands associated with this role change as the child ages. The risk of

injury to the back increases with increasing frequency, repetition and duration of lifting (King Lee et al., 1988; National Occupational Health and Safety Commission, 1990).

Unspecified back injury accounts for 7.3% of long-term injuries reported by women (Australian Bureau of Statistics, 1994). Statistics do not show whether these injuries have occurred at work or at home, or whether lifting children has contributed to these injuries. Back pain is the most frequently reported complaint of childcare centre staff (Grant et al., 1995) and 49% of back injuries reported in one study were associated with lifting a child (Brown and Gerberich, 1993). Most childcare-related injuries occur to the lower back (Whitebook et al., 1989, cited in King et al., 1996).

Three studies that examined the lifting and handling practices of childcare workers found that they were not using correct lifting and handling techniques (Owen, 1994; Grant et al., 1995; King et al., 1996). Recommendations arising from the studies included the provision of information and skills on correct lifting techniques as well as ergonomic solutions such as adjusting the height of work surfaces such as change tables. Mundt and colleagues (1993) recommended that education about correct lifting techniques should be extended beyond the workplace and into the home.

The stooped position involves lifting a load from the floor with straight knees and a bent back. The soft non-muscular tissue of the back that supports the load during this type of lift is often strained. As the weight and size of the load increases, as with a child getting older, the natural tendency is to bend over from the waist, in order to lower the loading momentum at the lumbar spine (Wilmarth and Herekar, 1991). Twisting, bending and holding the load away from the body can also cause strain on the back as the weaker muscles of the back are being used instead of the stronger muscles of the thighs (Nordin and Frankel, 1989; Workcover Authority of NSW, 1995; Phillips et al., 1996). The heavier the load and the further away from the body it is held, the more force there is on the discs and the more opportunity there is to damage them (Owen, 1994). The risk of sustaining a back injury also increases by two to three times when a person is twisting while lifting (Frymoyer, 1991).

Using the correct lifting technique is difficult when lifting children, as they may be heavy and are possibly in constant motion. This often results in having to lift children in positions that are biomechanically stressful, such as with feet and bodies placed in awkward positions or lifting children from the side, causing a twisting motion (Brown and Gerberich, 1993; Owen, 1994). Children are not compact packages, are unpredictable in their behaviour during the lift and are often lifted from the floor level and in confined workspaces where correct posture is difficult (Owen, 1994). Maintaining abnormal postures and positions over a long period of time has been identified widely as contributing to lower back pain (Phillips et al., 1996). 'As posture would seem

to be an important factor in the development of long term backache, there should be greater efforts to make mothers more aware of their posture' (Russell et al., 1993: 1302). Ergonomic considerations such as the height of work surfaces (Carson, 1994), workplace design (Workcover Authority of NSW, 1995) and design of equipment (Brown and Gerberich, 1993) can decrease the experience of back pain for mothers.

Clearly, the methods a mother selects to physically care for her young children and the equipment she uses while doing these tasks have the potential to affect her level of low-back pain or injury. To date, there seems to be no research that investigates the methods mothers select to perform childcare tasks, how they make these choices and the extent to which they are knowledgeable about techniques which protect them from back injury. The aims of this study were to discover the lifting and handling practices mothers use when performing childcare tasks; how they selected these methods; and their experiences using these methods. By determining what motivates mothers to do childcare tasks in particular ways, healthcare workers will be better able to design effective intervention strategies to assist mothers to select methods which put minimum strain on their backs but still meet their needs and concerns. This may lead to a decrease in the experience of back pain and injury for mothers of young children and those working in the childcare industry. Mothers included in this study were those with a child between birth and three years of age. This age group of children is perceived to place the greatest demands for physical care on mothers (King et al., 1996) and require the most lifting and handling.

Methods

Participants

Ten semi-structured in-depth interviews were conducted between April and September 1997. Participants were accessed from personal contacts of the researcher and subsequent snowballing (Minichiello et al., 1995). Each mother had at least one child between birth (0) and three (3) years of age. Figure 1 gives a brief description of the nine families who participated as part of this study (using pseudonyms). The mothers had no history of back pain prior to the birth of their first child. All participants were the primary carer for the child. This study considered a select group of tasks that involve lifting and handling of the child by the mother. The mothers in this study, through an initial questionnaire, selected the tasks that were focused on. None of the mothers had professional expertise in areas that would be likely to increase their knowledge of lifting and handling techniques (for example, physiotherapist).

FIGURE 1: The families

Kirsty, Peter, Jane and Charlie
Kirsty is the mother of two young children, Jane (3) and Charlie (1½). Kirsty and Peter currently live in a large town in rural NSW. Kirsty is a full-time mother, but does occasional night packing at a local supermarket. She prefers to do this so she does not have to worry about babysitters. Kirsty's husband Peter is a full-time labourer who works long hours and does shift work. This means Kirsty often does most of the childcare herself.

Louise, Robert and Helen
Louise and Robert live in a small town in rural NSW. Robert works on the family farm and thus works long hours every day. This leaves Louise to perform most of the childcare for Helen (2). Although Louise is occasionally involved in part-time family day care, at the time of the interview she wasn't working.

Janet, Ron and Stephanie
Janet is a qualified accountant who is currently working part time. Her husband Ron works full time (usually shift work) as an attendant carer. Although he looks after Sarah (2) on his days off, Janet is still doing the majority of care giving. Janet and her family live in rural NSW.

Lisa, Allan and Mark
Lisa has one child, Mark (1), and is currently working from home. This allows her to be the primary care giver while her husband works full time. Lisa and Allen live in Western Sydney, close to family and friends.

Julie, Anthony, Reece and Andrea
Anthony works as a mechanic for a large company in rural NSW. This job provides the financial security that allows Julie to stay at home with their children, Reece (3½) and Andrea (11 months).

Lesley, Scott, Kylie and Wayne
Lesley and Scott also live in rural NSW. Scott owns and runs his own business which means he is away from home for long hours each day. This leaves Lesley to care for the children, Kylie (2½) and Wayne (5 months), which she is currently doing full time. She occasionally works the odd day at the local courthouse when needed.

Alison, Gary, Jenny and Natalie
Alison has recently moved to a large country town in NSW. Her husband Gary works full time as a labourer while Alison works a few nights a week

as a waitress. This allows them greater financial security without having to pay for childcare. Alison therefore is the primary carer for her children, Jenny (3) and Natalie (2).

Michaela, Matt, Sally, Jason and Beth
Michaela has not worked since having her children, Sally (10), Jason (3) and Beth (2), as she prefers to stay at home with the children. Her husband Matt works at the local newspaper and often does shift work, which also does not allow her to work without childcare. Michaela and her family live in rural NSW.

Belinda, Mitchell and Natasha
Belinda and Mitchell live in Sydney's inner west district. Belinda is a pharmacist but is currently not working, preferring to stay home with Natasha (16 months) while her husband works. Belinda and Mitchell share much of Natasha's care, although Belinda still does most of it as she is at home the majority of the time.

Data collection

Participants were initially contacted by phone. If interested in participating, they were mailed an information package containing a cover letter confirming a date and time for an interview, an information sheet for participants, a consent form, and the preliminary questionnaire. The questionnaire was designed to focus the interviews on the tasks the mothers thought involved them in the most lifting and handling of their child. The questionnaire was pilot tested with the mother of a young child not participating in the study before mailing it to mothers in the study (Bailey, 1991; Polgar and Thomas, 1995).

The information gained from the questionnaires was used as the basis for the in-depth interview with each mother. The semi-structured interviews focused on three broad areas for the tasks discussed: (1) What method was used and why?; (2) What experiences had they had using these techniques?; (3) What methods of lifting and handling did they use and why? Semi-structured interviewing allowed the content and the process of the interview to focus on the issues that were central to the research and permitted flexibility to explore issues that were pertinent to the participant from their perspective (Minichiello et al., 1995). All interviews were tape-recorded and transcribed with the mother's prior knowledge and consent. The study was granted approval from the Human Ethics Committee of the University of Sydney.

Theoretical sampling was used in conjunction with snowballing. Each interview was taped, transcribed, coded and then analysed before the next interview was conducted. This enabled data to be collected, coded and

analysed concurrently so that decisions could be made on what further data needed to be collected from the informants in order to develop emerging themes. This gave direction to the research and emerging themes (Strauss and Corbin, 1990; Minichiello et al., 1995). Figure 2 shows the tasks discussed during the interviews and examples of questions and probes asked for each task and in relation to lifting.

FIGURE 2: Interview aeas and questions

- Bathing – shower, bath and baby bath; Dressing – change table, floor, bed, etc.
- Playing – indoor/outdoor; Sleeping – cot, bassinet, bed, etc.
- Feeding – highchair, rocker; Shopping – pram, stroller, trolley
- Getting in/out of car – car seat, capsule, positioning of seats

Types of questions asked for each task:

- What method do you use for _____ ?
- Can you describe how you do this?
- Why did you choose that method?
- Why have you decided to do it this way? Have you tried other methods?
- What was it about the previous method that you used that you didn't like?
- What do you think your main priority was when buying equipment?
- Did you get advice on what to look for from family and friends?

Questions on lifting included:

- How do you lift your children?
- Why do you lift this way? Have you tried other ways?
- Do you know the correct way to lift?
- Where did you learn this?
- What is it about the child that means you don't lift properly?
- Why do you lift boxes correctly and not children? What is the difference between them that causes you to lift differently?
- Do you lift differently depending on what activity you are doing?
- Were you ever given any advice on how to lift your children at the hospital or clinic?
- Have you ever had any trouble with your back?

Immediately on completing the interview, field notes were written noting any additional information that may not have been on tape and nonverbal cues that were noted during the interview. This also included information about the family such as ages of children and names of family members. Interviews were then transcribed verbatim and personal and

analytical files written as soon as possible after each interview and before the next one.

The validity of the interviews was ensured in several ways. First, emerging themes that were brought up in interviews were then tested through inclusion in subsequent interviews. Second, to ensure data triangulation, secondary data such as field notes and journals were used. Third, all interviews were transcribed verbatim to ensure the researcher did not misinterpret what was said by the mother. The researcher had chances to observe the mother performing some of the tasks discussed and view some of the equipment used. This ensured that what the informant was saying in the interview was what they were actually doing. Key issues that arose during the interview were also noted to assist the researcher in remembering issues that needed further explanation or investigation.

Data analysis

Data were coded using two techniques, open and axial coding (Strauss and Corbin, 1990). Initially, unrestricted (open) coding of interviews occurred. This allowed the identification and development of concepts in terms of their properties and dimensions. The researcher was then able to group similar events and incidents to form themes (Strauss, 1987; Strauss and Corbin, 1990). These themes were explored and developed to identify similarities and differences between them. Each interview was analysed individually and then compared with the other interviews, literature and field notes, so that common or consistent themes emerging could be noted. Axial coding consists of analysis of the individual categories. Possible relationships between the categories devised in open coding are noted in relation to their properties and dimensions (Strauss, 1987; Strauss and Corbin, 1990). Patterns, exceptions and more dimensions are looked for and noted. Strauss and Corbin (1990) suggest that this stage looks at working towards the development of a core category or central phenomenon around which all themes can be related.

Results

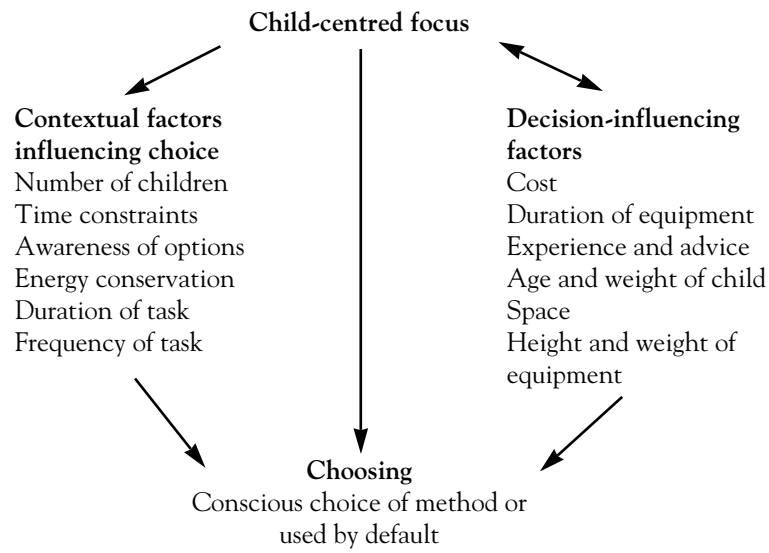
In this study data analysis was refined until the researcher had two major categories. These were choosing childcare methods and living with lifting. Choosing childcare methods includes those factors that influence how a mother does the childcare tasks, and living with lifting is about how mothers actually lift their children and why.

Choosing

Choosing childcare methods is a process that involves mothers considering certain factors before making the final decision on what method to choose.

For the mothers in this study, the comfort and safety of the child was central to the decision on what methods to use. The process of choosing is outlined in Figure 3.

FIGURE 3: Factors affecting mothers' choice of childcare method



All mothers put their own needs after those of the child. For example, the position of the car seat had little to do with the amount of effort it took the mothers to get their child in and out of the car. Rather, the decision was about the safest place for the child.

For the five mothers who used a baby capsule in the car, the decision on whether to lift the baby out, or the baby and the capsule, was based on whether the child was asleep. Although the mothers found the capsules heavy and awkward to lift in and out of the car they would still prefer to do this if it meant keeping the baby asleep. 'I only ever got the capsule out when she was asleep. The rest of the time I just lifted her out because it was heaps easier' (Louise).

In prenatal classes, the focus is on the child and care of the child. The advice mothers were given on lifting and carrying focused on pregnancy to ensure no harm would come to the baby. Mothers were given information concerning how to bathe, dress and care for the child from the child's perspective — that is, how to hold the baby so that the baby would not be dropped or injured. After the baby was born little information was given to the mothers on their own care in relation to lifting and carrying the child, but once again focused on the child.

Contextual factors influencing choice

There was little difference in the way choices were made between those mothers who only had one child and those who had more than one child. Mothers preferred ways that saved them time and effort and caused them the least amount of worry. The methods chosen were not, however, always those that were 'best' for the mother's back, just those that were time saving. Reasons given for choosing to use incorrect lifting techniques rather than correct lifting techniques were 'time', 'laziness', 'I did not think about what I was doing' or 'it was just a habit'. All the mothers commented that lifting was an unconscious activity thought about only when they have back pain or an ache. For mothers who had more than one child, time was of greater importance, because of the increased workload. These mothers would use time-saving techniques that involved doing tasks with both children at the same time, such as bathing.

Another area where time was important for the mothers was when the child was crying or upset. At such times the mothers preferred to get to the child as quickly as possible and would often do so to the detriment of their back, using poor lifting techniques.

Few of the mothers interviewed were aware that some equipment, such as cots, highchairs and prams, is now height-adjustable. Those mothers who did know about them found they were often too expensive to be included in the choice process.

Those mothers who put more thought into what they were buying before they purchased the equipment or chose a particular method, and who tried out the equipment, were the ones who were happier in the end. Mothers who had little input into the choice process, for example when equipment was given to them as a gift, tended to be less satisfied. Trying out equipment and putting more thought into the choice process occurred more often when a particular method was being replaced. At this stage the mothers were more aware of other options available, thus allowing them to improve on those factors they were not happy with.

Being able to conserve energy throughout the day was a factor in the mother's choice of lifting and carrying techniques. The methods chosen were ones that took the least amount of time and conserved the most energy, such as bathing children together. Playing games that involve lifting the children on to swings or pushing bikes, as well as rough and tumble, were also seen as physically straining. These activities were found to take considerable energy if done for extended periods. One of the mothers prevented a lot of bending and lifting while playing outside with her child by sitting.

Being tired affected the way mothers lifted. Although the mothers admitted to using incorrect lifting techniques most of the time, they also said that when they were tired, especially at the end of the day, they really did not care how they lifted.

Often the length of time the tasks took to perform was a factor in how much it affected the back, with the longer time having a worse effect on the mother's back. Mothers would therefore limit the amount of time spent performing these activities, either by doing them for a certain length of time or stopping when they felt a twinge in their back. Other tasks, such as putting children into a highchair, could be completed comparatively quickly so were not seen as such a strain.

To counteract back strain, mothers would try choosing methods that decreased the amount of lifting and bending. For example, mothers would adopt a position such as kneeling or sitting beside the bath that allowed them to tend to their children but also limited the strain placed on their back.

The frequency of the task and the amount of back strain it caused for each mother were entirely individual, with some mothers finding lifting more frequently when the child was younger harder than lifting a heavier, older child less often. For other mothers it was the reverse. Belinda said that at a young age the child is a dead weight and cannot support itself, and therefore she had to do all the work.

Those who found it more difficult with older children developed techniques that would allow them to decrease the amount they were lifting and carrying. Children would be dressed on the floor, and/or the mother would get down to the child to comfort him/her instead of lifting the child up. In addition, older children became more independent, so that they were less likely to want to be picked up and carried, and the mothers encouraged this.

Toilet training was one task when frequency was really noticed. The number of times the mothers had to assist their child on to and off the toilet each day was considerable, and this became quite physically demanding. By comparison, lifting the child into and out of the highchair was not a problem because it was something that was done only a couple of times a day and did not take long to complete. Getting the child in and out of the car was not commented on very often because it was also a task that was not performed as frequently as other tasks, for some of the mothers. Picking up toys was an area where frequent bending was causing back strain for some mothers. They attempted to minimize this by getting children to help or by picking up groups of toys less frequently.

Decision-influencing factors

Cost figured in the choice process for all mothers, regardless of their financial situation. All mothers, without exception, felt it was too expensive when setting up the nursery to buy everything new. Those items that were more often than not purchased new were car seats and baby capsules because the mother felt it was not safe to buy secondhand. Items borrowed or bought secondhand were often purchased from people the mothers knew.

Space was considered along with cost. Items they could 'do without', such as a change table, were passed over for the more essential items such as cot and cupboards if the bedroom was small.

When looking at secondhand equipment and after ensuring it was appropriate for the child, quality was most important to ensure it would last for the required period. All mothers interviewed chose to use secondhand cots due to the expense involved in buying these new. How safe and sturdy it was was a major consideration. What cots looked like was of secondary importance as long as they were presentable. On the other hand, most of the prams and car seats were bought new and what they looked like was more important to the mothers.

The length of time a piece of equipment would be used for also affected the decision of whether to buy new or secondhand. Equipment that was used for shorter periods, such as bassinets and change tables, were more likely to be borrowed or secondhand, and were less likely to be replaced if not suitable. Cheap pieces of equipment such as baby baths were often bought new.

Equipment that was used more frequently was more likely to be replaced if they were not suitable. For example, prams were more likely to be replaced than change tables because they were used for longer periods.

When deciding what method or equipment to use, advice from other people such as friends and family was not a high priority. Occasionally, a mother would see a friend use a method she liked, ask her about it and then decide to use that method. Usually this did not occur until after their first child was born and they were themselves deciding what were the best methods to use.

One of the most useful informal social networks talked about by two mothers was a parenting group or playgroup. This involved getting together once a week and while the children played the mothers could talk and share stories or ask advice if something was troubling them. Because the mothers all had children at similar stages, advice was current and relevant for them.

Advice on correct methods from health professionals was given higher regard than the advice of friends and family. When questioned on whether they were given any advice on what were good methods to use, either pre- or postnatal, the general response was that advice was given. However, it was not adopted unless the mother had a particular interest in the advice given. When the mothers asked for advice from health professionals, their advice was more likely to be used. The advice that was given and asked for was more likely to be about the welfare of the baby than that of the mother. For example, when a nurse in the hospital gave Michaela advice on how to bathe her baby, what was a good posture for Michaela to adopt or a good height to be bathing the baby at was not discussed.

Although three of the mothers received information about correct lifting after giving birth, they found that they did not really take much of it in. Generally, they felt in the first week after the birth that they were overwhelmed with information coming from many different sources. It was not until they had passed this initial stage that they were more open to information. However, this was again subject to what they were interested in hearing. Thus, the timing of when to give mothers advice on correct methods to use is critical.

Mothers seemed to want to find out information for themselves and relied on their own experience and knowledge rather than on that of others. The mothers interviewed found that once they had gained some experience with particular methods they were better able to judge what was a good method for them. Methods would often be changed as the child aged and outgrew a particular method. For example, moving from a change table to the floor occurred as the child aged and became too heavy to lift up. One mother, Alison, reported bathing with her children when they were very young and needed support because this placed less strain on her back than leaning over the bath. Once her children were old enough to sit unaided in the bath she reverted to sitting beside the bath. For many of the mothers, bathing did not become a problem until they moved from a baby bath to a proper bath. Other tasks where the type of demand on the mother was age specific included dressing, toilet training, playing and lifting children into and out of cots. For some of these tasks, namely dressing and lifting in and out of the cot, the demands eased as the child became older and more independent. For other tasks such as playing and toilet training the demands intensified as the child aged because of increasing demands for bending and lifting.

Along with their own experience, mothers read parenting magazines to get ideas on what were the safest and 'best' methods to use. The *Choice* magazine articles seemed to be the ones that most of the mothers relied on, along with articles in parenting-specific magazines such as *Parenthood*. Reading magazines and getting ideas from them was preferred to getting advice from others.

With secondhand equipment, aesthetics was important only to the extent that the equipment was presentable and in good condition. However, for new equipment, aesthetics was much more important. Mothers were often attracted to what the new item looked like before anything else. With items such as prams and strollers that were more likely to be on show, aesthetics was important.

The weight of a piece of equipment was considered only when buying prams. Mothers wanted a pram that was light so that lifting it into and out of the car and pushing it was not a problem. The height of equipment was not a focus in the choice of method for most mothers. Only one mother set out purposefully to buy a pram that had adjustable handles. The other mothers did find that it became an issue after they started using a particular method. For example, mothers found that they chose bassinets based on availability and cost but found once they started using them that they were a good height.

When settling on a particular childcare method it seemed that the choice was either made specifically for its correct lifting or ergonomic features (by a minority of mothers) or chosen for other reasons and later found to be ergonomically or posturally correct. This occurred in the choice of equipment, specific methods and positioning of equipment. Regardless of whether methods were chosen consciously or used by default, the process of choosing methods was the same. Occasionally, decision-influencing factors would need to be

considered before the child if finances were limited. However, a cheaper method would be chosen only if the child would be safe and secure.

Living with lifting

Lifting tended to be an activity that was given little thought by the mothers interviewed in this study. They found that they did not think about what they were doing unless they had an ache or pain that made them aware of their lifting technique:

> So you just do it whichever way you think of at the time, you just grab her and do it, whichever way was the quickest. If you had back trouble, like if you actually ended up having something wrong with your back, it would make you more conscious and you'd probably think about it more often. But while you get away with doing the silly things every now and then, you don't think about the consequences (Janet).

The lifting method chosen was consistent for all the tasks the mothers completed each day. None of the mothers felt they lifted differently for different tasks. Stoop lifting, the method they chose, was chosen because it was what seemed to come naturally for all the mothers.

The six mothers who had worked in jobs that required lifting and carrying used correct lifting techniques at work but not at home. They found lifting inanimate objects was different to lifting children and did not think to use correct techniques at home. Those mothers who did not learn lifting techniques at work learned them through other avenues such as school or health campaigns. The three mothers who did occasionally use correct techniques were prompted to only after developing back strain.

Mothers also reported not feeling the same need to get down under a child as they did for lifting tasks at work. Children are usually not low so the mother could lift them under the arms. They felt that this did not encourage the same use of correct lifting procedures as the lifting needs at work. The mothers also did not class their children as heavy compared with shopping bags. The mothers felt therefore that they did not need to use correct lifting techniques despite the strain that poor lifting would be placing on their backs:

> I just pick her up under the arms, I don't bend my knees, I suppose I should but she's not very heavy, she's only about 12 or 13 kilos. Perhaps a little bit more, and yeah I just lift her up and put her straight in front of me and that's it... I don't really think to bend my knees because by the time you think to bend them you've already lifted her, before you even think about it. I mean if she was a big box or something you'd bend your knees (Louise).

The mothers were not transferring what they were learning in one task to other areas of their routine. For example, when a mother used a bench to bathe the child and found it to be a good height, she was not then transferring this information to other tasks such as dressing. The same occurred with

playing. Mothers would stop pushing a child on a bike or swing when their back started to ache, but did not necessarily stop performing other household or childcare tasks because of back strain.

The mothers would justify using an incorrect lifting technique by saying that they did not use it very often or that the task takes only a short amount of time. What they were not realizing is that all the small tasks that they were performing incorrectly may eventually lead to an injury by gradually building up until finally some small or large incident caused major back strain. Coming into contact with someone else with a back strain also did not mean the mother would lift and carry properly to prevent an injury of her own.

All three mothers who tried to use correct lifting techniques noted that it was hard to accomplish correct lifting. Unless they were concentrating when performing each lift, they would revert to their old habits of poor lifting. Mothers also felt that it was not always possible to use correct techniques when lifting children. Examples are lifting a child out of a car seat or a cot, when it is not possible to squat lift. Also squat lifting involves using the larger muscles of the thighs and the mothers found this more work and greater effort than just bending down to pick up the child. Using squat lifting was seen as an added strain on their resources, instead of a way to conserve energy.

Although mothers were not aware of what they were doing to their backs, they did seem to adopt or change methods to ones that put less strain on their backs and made it easier for them to complete childcare tasks. This seemed to be a technique to prevent back injury and ultimately minimize the effect on the mothering role.

Alison summed up how methods were chosen. She said she did not know whether her methods were the right methods, but they were the right ones for her as they make the job easy and had not caused her any type of back injury. The methods came about by learning from mistakes previously made or from finding that something hurts and not using that method again. As yet, none of the mothers has had any major disruptions to their mothering role as result of back strain. Those mothers who have had back strain have developed methods that allow them to continue to perform the tasks demanded of their role without further injuring their backs. It is possible that by changing methods at an early stage of discomfort they may actually be preventing a more serious injury.

Two of the three mothers who indicated that they have had back problems since having children have more than one child. In general, the mothers with more than one child did seem to get more frequent back strain or aches with the increase in physical demands.

Back strain after having children seemed to be something the mothers expected to happen. They would put up with the pain, explaining that it was just something that came with having children and there was little that could be done about it. Lesley said that she would not even go to the doctor because she felt there was nothing he could really do for her and it was just something she had to put up with.

Discussion

The daily tasks listed on the questionnaire by mothers in this study were consistent with those listed by Brown et al. (1994), Christiansen (1991) and Dyck (1992). Tasks included feeding and hygiene needs, play and housework. Specific tasks listed were consistent with the tasks identified by childcare workers such as changing nappies, dressing and lifting in and out of highchairs and cots (Owen, 1994; Grant et al., 1995; King et al., 1996).

The childcare workers in the King et al. (1996) and Owen (1994) studies identified the same tasks as the mothers of this study, namely lifting in and out of cots and on and off change tables, as involving a lot of lifting and carrying. For mothers in this study bathing was the most common task listed which is not done by childcare workers generally.

Literature suggests that the focus of childcare is on the child, not the caregiver (King et al., 1996). Childcare centres were designed to respond to the needs of the child, without considering what needs the childcare worker may have (Grant et al., 1995; Markon and LeBeau, 1994, cited in King et al., 1996). Childcare methods for mothers are similarly undertaken, emphasizing those features that are beneficial for the child, often without thought for the mother's own needs.

Calder (1994) observed that caregivers may be knowledgeable about health issues for their children, but do not then relate that information to the promotion of their own health. The mothers in this study were well aware of what methods were appropriate for the child's health and safety and put this before anything else, including their own health needs. Because most childcare is performed by mothers (Kane, 1993) it is important for them to become aware of their own needs and to act on them. Looking at their own needs was seen to be selfish by the mothers in this study. Attanucci (1988) describes this: 'the good mother responds to the child's needs and demands in the child's terms and is, thereby, rendered selfless. The bad mother takes into consideration her own needs and is, thereby, perceived as selfish' (1988: 203).

Inadequate work heights, incorrect lifting techniques and frequent sitting on the floor were specific problems noted by King et al. (1996) in the lifting practices of childcare workers, and by mothers in this study. Literature suggests that the physical setting is usually designed for the needs of the child, not the carer (King et al., 1996) and was similarly seen in this study.

The mothers' focus on the child's needs is understandable. However, the mother needs to be aware that if a major injury were to occur to her back, her mothering role would be affected. She may then not be able to successfully tend to all of the child's needs, as she may want to. Thus caring for her back is essential to her and her child's well-being.

The use of time-saving techniques by mothers in this study is consistent with the literature (Kane, 1993), especially for mothers with more than one child. These mothers experienced more frequent back strain or aches than did

mothers with one child. This was due to the increase in physical demands brought on by the increase in workload, as seen by Frymoyer (1991). High frequency and repetition of tasks, such as lifting children and bending and picking up toys, was a major issue for the mothers in this study. This high frequency and repetition of tasks has been reported in the literature as a factor that increases the risk of back injury (King Lee et al., 1988; National Occupational Health and Safety Commission, 1990). To minimize this, the mothers developed techniques that involved less bending, which helped to relieve the repetitive cycle of compression on the spine (NSW Department of Education, 1983) and lowered the risk of injury.

With advice from family and friends not a high priority for the mothers in this study it seems that they were not greatly influenced by 'cultural scripts' (Willard, 1988). In this study advice from others was listened to only if the mother asked for it and wanted to know something. This was where informal social networks were used by the mothers (Okagaki and Divecha, 1993) to get information from a number of friends before deciding what they would do themselves. The informal sharing of information and ideas during groups such as playgroups enables mothers to check what they are doing with their children against cultural scripts and common practice of society (Willard, 1988). Groups such as this should be encouraged so that mothers can learn from the wealth of experience that other mothers have without feeling that they are being told what to do. When mothers received advice from health professionals, this was given greater weight by mothers in this study than advice from family and friends. This may have been because of the professionals' specialized knowledge and perceived experience with a large number of mothers.

Mothers in this study made decisions for themselves based on their own past and present experience, as did those in the study by Attanucci (1988). This became an important tool in the choice of what method to use. Although the mother began to use a method based on cultural scripts or what she had seen someone else do, it was her own experience that enabled her to tell whether this method was going to work for her.

This is consistent with the third script presented by Willard (1988), where methods will be created based on the mother's individual situation. The first and second cultural scripts mentioned by Willard (1988), although not directly discussed by the mothers, could be seen through their actions. The first script of being a selfless wife and mother can be seen in the mother's desire to always put the child's needs before her own needs. The second cultural script, the superwoman role, can be seen in those women who combine mothering with the work role and try to 'do it all' (Willard, 1988: 229).

Mothers in this study did not see the workplace as a valuable resource, as has been reported by Willard (1988). This applied not only to advice but also to lifting and handling skills learned in the workplace, which were not being used in the home for lifting and carrying children. Parenting literature was, however, widely used by the mothers to determine what were the 'better'

methods to use. Advice in these magazines tended to be about what was best from the child's perspective and not that of the mothers.

As children aged, the mothers reported less physical handling of their child being required. So, when children are younger, mothers are performing a lot of lifting and handling and need to care for their backs to prevent injury from occurring. However, this study indicates that mothers tended to use stoop lifting which seemed a natural choice for them. Childcare workers (King et al., 1996) also favoured this technique. Mothers in this study put little thought into how they would lift, doing what was quickest and easiest. This is also consistent with other literature (Owen, 1994; King et al., 1996).

Although childcare has been classified as light work (National Occupational Health and Safety Commission, 1990; Grant et al., 1995), the repeated use of poor techniques over many incidences of lifting and carrying exposes mothers to the potential of cumulative stress as a cause of back injury (Leonard, 1990). Mothers in this study gave no evidence that they used any of the safe lifting and handling techniques suggested in the literature (NSW Department of Education, 1983; Nordin and Frankel, 1989; Workcover Authority of NSW, 1995; Phillips et al., 1996). This may be because the principles suggested are for inanimate objects (NSW Department of Education, 1983; Delitto et al., 1987; Sullivan, 1989) and are hard to apply to a moving child. Little information is available about lifting moving objects such as children. Mothers may not know what the 'best' method is when the principles of good back care when lifting cannot all be applied to the childcare situation. Mundt et al. (1993) suggested extending the education of lifting techniques beyond the workplace and into the home. There is no evidence in the literature that this has been done.

Literature also suggests that little research has focused on ergonomics in childcare (King et al., 1996). Choosing equipment for ergonomic reasons was not a priority for mothers in this study. Most childcare equipment is designed for the 'average' mother, and equipment that is adjustable is generally at the more expensive end of the range. Literature suggests that with correct workplace design, in this case each mother's home, repetitive bending, stooping and twisting can be minimized (Carson, 1994; Workcover Authority of NSW, 1995).

Breen et al. (1994) reported that a dull ache across the lower back was the most common complaint reported shortly after birth. This was also the case with the mothers interviewed. However, for the mothers in this study the backache was not just initially after the birth but continued off and on until the time of the interviews (5.5 months to 3.5 years). This may indicate that back pain in these mothers is linked to factors other than the birth process or anaesthesia (MacArthur et al., 1990; Breen et al., 1994), such as the continuous lifting and carrying of children while using incorrect techniques.

Conclusion and recommendations

When choosing a childcare method the mothers in this study took into consideration a wide range of motivating factors. Contextual factors involved consideration of the number of children the mother had, her time constraints, her awareness of options available, ways to conserve energy and the duration and frequency of the task. Decision-influencing factors mainly revolved around the purchase of equipment and included cost, duration of time the equipment would be used, what experience and advice was offered by others, aesthetics, the age and weight of the child, space available and the ergonomic dimensions of the equipment. Most methods were chosen for the safety of the child rather than because they met the mother's needs.

Often mothers would give little or no thought to the way they were lifting and carrying their children. Previously learned methods of correct lifting and handling were generally not transferred and applied in the home situation to lifting and carrying children. Stoop lifting was the method most often used. Such a technique repeated often during the day as a mother cares for her child exposes her to increased risk of back injury.

Research is needed to determine the best methods for lifting and handling children in the variety of childcare tasks that mothers perform every day. Specific techniques for the variety of tasks can then be recommended to mothers, with a view to decreasing the incidence of back pain. Mothers need to be assisted to apply these to their own unique situation and context. This information needs to be provided at a time when mothers are ready to receive it and make use of the information. Immediately following the birth of their baby does not seem to be an optimum time, as mothers feel overwhelmed with their new role and the amount of information they need to absorb. It might be better to provide this information through mothers' groups and other community settings when mothers are more ready to listen. The information provided needs to take into consideration the contextual factors that influence mothers' decision-making about childcare methods. Information about making ergonomically sound choices when purchasing equipment needs to reach mothers before the birth of their first child, which is when they tend to be making these choices. This study indicates that parenting magazines may be a good place to provide this information.

Further research is also required to determine the extent of back pain experienced by mothers. The nature of the tasks mothers perform each day over a number of years as they care for their children indicates that they are likely to be subject to back pain. However, no research has determined the extent of the problem in this area. Curricula for health professionals such as occupational therapists and physiotherapists need to include information about the mothering role, the risk of injury the role exposes mothers to and suitable intervention strategies aimed at both prevention and treatment.

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