WHAT DO WE KNOW ABOUT SIBLING ATTENDED BIRTH?

A SYSTEMATIC LITERATURE REVIEW

Nora Li Naber

A dissertation submitted in partial fulfilment of the degree Master of Midwifery at Otago Polytechnic, Dunedin, New Zealand

Submission date: March 13th, 2017

Declaration Concerning Thesis Presented for the

Degree of Master of Midwifery

I, Nora Li Naber

Of Fuhlsbüttler Str. 743,

22337 Hamburg, Germany

Solemnly and sincerely declare, in relation to the dissertation entitled:

WHAT DO WE KNOW ABOUT SIBLING ATTENDED BIRTH? A SYSTEMATIC LITERATURE REVIEW

(a) That work was done by me, personally

and

(b) The material has not previously been accepted in whole, or in part, for any other degree or diploma

Signature: Nabe

Date: 29.1.2017

Abstract

While common place in other cultures, the concept of sibling attended birth (SAB) first emerged in the western world in the 1970's as part of the natural childbirth movement. SAB today is not common and predominantly takes place during homebirths. Research undertaken in the field utilises a wide range of methodologies and addresses various aspects of the birth experience, with emphasis on the children's experience of birth. Most of the studies are somewhat dated and a large proportion is in the form of unpublished grey literature.

A systematic literature review was undertaken with the aim of informing future research and consolidating the existing findings into a body of knowledge to inform decision-making processes and guide midwifery practice throughout the SAB experience. An exhaustive literature search identified 29 relevant studies, of which 22 were included in this review. Studies were assessed for quality using the Crowe Critical Analysis Tool. Data analysis followed a narrative synthesis approach.

Findings were presented according to specific areas of interest relating to various aspects of the SAB experience, which were grouped under three overarching themes: preparing and planning for SAB, experiencing SAB and life after SAB. Discussion of the findings focuses on influencing factors of the SAB experience and highlights implications for midwifery practice as well as recommendations for future research.

This dissertation is dedicated to all families who purposefully shape their birth environment, and to all midwives who support them in this process.

Acknowledgements

My sincerest gratitude to all the people who helped me in the process of writing this dissertation. Firstly, to my supervisor Suzanne Miller for her highly valuable input and her belief in the relevance and significance of this dissertation.

To the librarians at the Otago Polytechnic Interloan Service, who professionally and efficiently responded to my never-ending stream of requests for difficult to source material.

To Dr Sally Baddock for her contribution to the quality assessment of the studies, as well as her helpful comments during the review of the manuscript.

To my husband for his love, encouragement and IT expertise.

To my parents, who supported me on so many levels throughout my entire postgraduate education.

Finally, to my third child, whose steady morning naps were the single most important contribution to the completion of this project.

Table of contents

Chapter three

Chapter four

Chapter five

List of tables

List of figures

Chapter one

INTRODUCTION

Birth, like other significant life-cycle events, is deeply interwoven with cultural norms and values (Kitzinger, 2015). How birth is perceived within a society, influences who attends births and where births take place (Coxon, Sandall & Fulop, 2013). It is therefore not surprising, that the concept of sibling attended birth (SAB) has evoked a wide variety of customs and beliefs throughout time and across different geographical locations.

The first chapter of this dissertation provides insight into the cultural and historic background of SAB and outlines the relevant literature. A description of the aims and objectives of the review as well as the author's personal interest in the research area complete the chapter.

1. Background on sibling attended birth

A systematic review of historic ethnographic observations by Anderson (1983) shows a wide range of customs around the presence of children at birth globally. In some cultures, children were shielded from witnessing any processes of animal or human procreation, until their wedding ceremony. In other cultures, birth occurred openly with no restrictions on attendance. Adults and children wandered in and out of the birth space, watching and giving support to the mother. Even cultures that regarded birth as a private event did not necessarily exclude children, as is the case in the Aranda people of Australia. Here women traditionally birthed their baby in the bush away from the village. Inquisitive children often followed, and in many cases, were the only people in attendance at the birth (Schulze, 1891 cited in Anderson, 1983).

Anderson (1983) concludes, that there is no such thing as a universal taboo on children witnessing birth. On the contrary, involvement of children at birth on some level was noted in two-thirds of the ethnographic documentations included in her review.

In the western world, the Victorian era introduced the notion of birth as an extremely private event (Wertz & Wertz, 1977). It is not known how much involvement children had during the birth when home was still the most common place of birth. Active participation is unlikely, but proximity alone suggests that children had at least some point of contact with the birth event (Anderson, 1983; Fragner, 1979).

After birthing shifted from the home to hospital, which in many places occurred in the 1940s, children became completely removed from the birth process (Anderson & Brown, 1979; Issokson, 1990). Inherent in the medicalised model of childbirth is the belief of birth as a pathological event that necessitates sterile surroundings and the attendance of specialists, which led to a dehumanisation of birth and the isolation of the birthing mother (Brubaker & Dillaway, 2009; Issokson, 1990).

The natural childbirth movement, which gained momentum in the 1960s and 70s challenged this existing paradigm. Natural childbirth methods, women's self-determination, the involvement of fathers in the birth and the notion of family centred care were core concepts of the movement (Issokson, 1990; Shea & Webster, 1990). Once the involvement of fathers in the childbirth experience became a well-established concept, families expressed their wish to include older siblings during birth as well (Clancy, 1985; Daniels, 1986).

The United States Maternity Options for Mothers survey (Scaer & Korte, 1978) found that at the time, a third of women wanted the option to have children present during birth. The natural childbirth movement resulted in a rise in the number of homebirths and births occurring in free-standing birthing units, but also impacted on the birthing practices in hospitals (Anderson, 1983). Home-like birthing rooms and policies to include family members were introduced to meet women's wishes for natural, family-centred birth (Anderson, 1983; Issokson, 1990). A change towards a more family-centered approach to childbirth is also documented in a position statement of the United States Interprofessional Task Force on Health Care of Women and Children (1978), which declared that childbirth is an experience that is appropriate and beneficial to be shared by the family as unit.

The first sibling attended hospital birth is documented to have taken place in 1975 in the Mendocino Coast hospital in California (Young, 1982 cited in Clancy, 1985). The next two decades saw a rise in the number of hospitals and birthing units in the United States permitting children to attend births (Humrichouse, 1995). Several hospitals and birthing units introduced sibling participation programs, involving protocols and specific preparation regimens such as sibling birth preparation classes (Daniels, 1983; Leonard, Irvin, Ballard, Ferris & Clyman, 1979; Lumley, 1983).

In 1983 a survey of 78 family-centred birth facilities in the United States reported 34 percent of older siblings were present during labour and 23 percent during birth (Phillips, 1983 cited in Anderson, 1983).

The concept of including children at birth triggered strong and opposing responses. Those that welcomed the idea, pointed out natural and effective teaching opportunities for children, as well as positive effects of sibling attended birth (SAB) on family unity and the sibling-baby relationship (Feldman, 1999; Hathaway & Hathaway, 1978; Kitzinger, 2002; Kuhn & Kopcinsky, 1984; Parma, 1979; Perez, 1981; Pestlin, 1999; Simpkin, 1993). Reasons listed against the involvement of children at birth, were similar to those once listed against the involvement of fathers: fear of contamination of the sterile field, obstruction of doctors and nurses and possible psychological repercussions (Anderson & Brown, 1979; Trause & Irvin, 1982). Concerns were also voiced about the impact the presence of children could have on physiological processes and the mother's ability to be fully immersed in the work of labour and birth (Gaskin, 1990).

Discussions on the potential benefits and hazards inherent in SAB revealed the necessity to create an evidence base to inform current policies. Several studies were undertaken in hospitals and birthing centres, as a means to evaluate newly implemented SAB programs (Daniels, 1983; Isberg & Greenberg, 1987; Krutsky, 1985; Leonard et al, 1979; Lumley, 1983). Other published research studies include a number of birth settings (Anderson, 1981; Anderson & Brown, 1979; DelGiudice, 1986; Mehl, Brendsel & Peterson, 1977). Grey literature, in the form of dissertations, makes up a big proportion of the body of research on SAB (Anderson, 1983; Bernhard, 1981; Clancy, 1985; DelGiudice, 1984; Fragner, 1979; Hammond, 1986; Hoyer, 1984; Hubner, 1980; Issokson, 1990; McGeachy, 1983; Shea & Webster, 1990). Only very few studies were undertaken more recently (Jouhki, Suominen &, Åstedt-Kurki, 2015a; Okubo, Sankai, Yanagisawa & Kano, 2008) and no New Zealand based publications have been identified.

The body of research on SAB includes qualitative, quantitative and mixed methods approaches. A wide variety of data collection methods have been used to assess multiple aspects of the SAB experience, including analysis of children's drawings, observation, interviews with children and/or parents and questionnaires. Most research attention has

been paid to the children's experience of SAB and the behaviour of children after the birth. Decision making processes, preparatory activities and the parent's experience have also received considerable attention. Overall research findings describe the SAB experience as positive for all parties involved. A description of the settings, methodological approaches and conclusions of the individual research studies can be found in chapter three.

It is unclear why fewer studies exploring the SAB experience have been published in the last 20 years. This may be related to a decrease in SAB occurring, but there is no evidence available to support this conclusion. An internet search for lay articles on SAB, showed that most of the currently available articles are positive accounts of women's and midwives' experiences of sibling attended homebirth, often including suggestions on how to prepare children for birth (England, 2011; Foster, 2014; Hippie Housewife, 2012; Hunter, 2014; Lapp Cryns, n.d.; Littlejohn, 2011; Ohm, 2015; O'Mara, 2015; Pekin, 2015; Rüdiger, 2014; Wattis, Wayne, 2011; 2015; Wright, n.d.). Other articles discuss SAB in more general terms, pointing out advantages as well as potential difficulties inherent in the experience (Babycenter, n.d.; Heartman, 2015; Kowalczyk, 2012; Pregnancy Info.net, n.d.).

Responses to articles on SAB as well as discussion threads in parenting chatrooms (Berkley Parents Network, n.d.; Huggies.co.nz, n.d.) suggest that most SABs take place at home, and show a range of opinions on the topic still exist. Very recently the SAB experience of renowned chef and television personality Jamie Oliver has sparked renewed debate on the topic (Durnin, 2016).

A lack of evidence based and referenced information on SAB is evident in the lay literature. Those authors who cite literature on SAB, include only a fraction of research available on the topic, which is most likely due to the age of many of the studies and the large percentage of grey literature. Difficulty to access relevant literature was also evident in the recent peer reviewed research publications. Jouhki et al (2015a) for example state that to the best of their knowledge, SAB has only been addressed in five research publications since 1979.

The researcher concludes that the review of the literature on SAB shows a heterogeneous sample of studies that spans several decades, focuses on a wide range of aspects, and utilises various methodological approaches. So far, no attempt has been made to collect and synthesise these studies' findings, with the implication that available evidence has not been drawn upon effectively to inform more recent literature on the topic. This dissertation aims to fill this gap in the form of a systematic literature review.

2. Aims and objectives

The objective of this review was to perform an exhaustive literature search, in an attempt to gather the entire corpus of available research pertaining to the topic area of SAB. The resulting heterogeneous sample of studies was assessed for quality; findings were extracted and analysed and finally integrated to form a body of knowledge. This process was guided by the research question: what do we know about sibling attended birth?

The aim of this process is to enable women, their families and midwives to use consolidated information as a basis for informed decision making around the attendance of siblings at births. Where a SAB is planned, findings from this review will help guide women and midwives throughout the preparation, labour and birth, and the resolution of the experience. Furthermore, this review aims to inform future research into SAB by pinpointing gaps in knowledge and suggesting suitable approaches to fill these gaps.

3. Personal and professional interest

The researcher's interest in this topic is both personal and professional. In her role as a midwife, she witnessed SABs, both at home and in a hospital/birthing unit context. The children brought a sense of wonder and joy into the birthing process and the parents enjoyed experiencing the birth as a family. When planning her own second and third homebirths, the researcher arranged for the possibility of having a SAB. Even though the timing of the births meant that siblings were not involved, the researcher believes the preceding preparation to have been beneficial for her children, as they became more knowledgeable about birth and understood they were an important part of this lifechanging event.

3.1. Researcher reflexivity

The researcher acknowledges that her personal and professional experiences, beliefs and opinions of SAB predispose her to hold preconceived conclusions on the topic, which could lead to researcher bias. In a bid to add transparency to the dissertation, the researcher documented her assumptions and beliefs relating to SAB before commencing the project. She believes SAB to be a safe and beneficial experience for children of all ages given adequate preparation and support. Furthermore, she believes that SAB teaches children important lessons about birth, fosters a sense of family unity and helps families to better adjust to life with a new family member. The researcher feels that families should be given the option of sibling involvement during birth, unless significant complications or birth by caesarean section are anticipated. Those families who choose SAB should receive supportive care and guidance on how to achieve optimal outcomes for every member of the family.

Strict adherence to systematic approaches in all stages of the literature review, consultation with the research supervisor and actively challenging any preconceived notions throughout the review process helped to minimise the impact of researcher bias on the findings of this review.

4. Structure of the dissertation

The dissertation is made up of five chapters. This chapter provided background information on the topic of SAB and stated the aims and objectives as well as the researcher's personal and professional interest in the topic area. The second chapter illustrates the methodological approach and discusses each stage of the review process in detail. An overview of the settings, methodological approaches and conclusions of the included studies is provided in chapter three. In the fourth chapter the results of the literature review are presented. The final chapter, the discussion, summarises the main findings and contains a more in-depth analysis of some of the themes identified in chapter four. Strengths and limitations of the review process are discussed and recommendations for midwifery practice and future research projects are made.

Chapter two

METHODOLOGY

This chapter illustrates the methodology underlying this review. Firstly, the methodological approach and framework is presented. Next, each stage of the review process is discussed in detail.

1. Methodological approach and framework

A systematic literature review uses specific, reproducible methods to identify, select, appraise, synthesise and analyse studies that are relevant to a research question (Booth, Papaioannou & Sutton, 2012). Systematic reviews guide future research and aid decision making by bringing together knowledge from different studies and assessing the strength of the evidence (Booth et al., 2012; Fink, 2010). Different approaches to undertaking a literature review exist, based on the research question and the context of the review (Booth et al., 2012).

An integrative, or mixed methods approach was chosen for this review, as studies on the topic of sibling attended birth (SAB) utilise several different approaches, both qualitative and quantitative. Integrative reviews are particularly suitable in midwifery research, as they can provide answers to more complex questions which midwives may encounter in practice (Healy, Humphreys & Kennedy, 2015). The systematic approach to integrative reviews by Whittmore & Knafl (2005) provided the methodological framework for this review, which is also consistent with the PRISMA guidelines for reporting systematic reviews (Moher, Liberati, Tetzlaff, Altmann & the PRISMA group, 2009).

2. The five stages of the review process

Whittmore and Knafl (2005) break the review process down into five stages: problem identification, literature search, data evaluation and extraction, data analysis and presentation of results.

2.1. Problem identification

A preliminary literature review undertaken in preparation for this project, led to the anticipation of a limited number of relevant studies investigating a range of elements of the SAB experience. Very few recent studies and no literature reviews of the topic had been identified. This apparent gap in research revealed the need to consolidate the findings

of the diverse literature, in the form of an integrative systematic literature review. Comprehensiveness rather than selectivity was the focus of the problem identification stage both in the formulation of the research question, as well as the identification of search terms.

2.1.1. Research question

The SPIDER tool (National Collaboration Centre for Methods and Tools, 2013) shown in Table 1, was used in the formulation of the research question, as it is particularly suitable for qualitative and integrative reviews. The resulting research question: what do we know about sibling attended birth? was chosen to emphasise the goal to include all studies relating to SAB.

Table 1: Formulation of the research question: SPIDER tool

(S) sample	Children/parents/midwives who experienced planned SAB at home/hospital/birthing unit worldwide.
(PI) phenomenon of interest	SAB, this may include scenarios where SAB was planned and prepared for, even if siblings did not end up attending labour and/or birth.
(D) design	Any research design, excluding single case reports or papers that are not research studies. No limits on publication date.
(E) evaluation	Including, but not limited to: planning/preparing for SAB, Parents'/children's/midwives' experience of SAB, effect of SAB birth on sibling rivalry/children's behaviour/interfamilial relationships.
(R) research type	Qualitative/quantitative/mixed methods

2.1.2. Identification of search terms

The intentional broadness of the research question called for the use of a highly sensitive search strategy. Ten primary research studies, which were accessed during the preliminary literature review, were analysed for potential search terms, which were recorded according to their location in the document (title, abstract or body of the text). The exercise showed that the oldest study used the terms 'children' rather than 'siblings' in the title and

throughout the body of the text, whereas all other study titles contained the terms sibling/siblings. The term ‘birth’ appeared in all but one title, where the term ‘delivery’ was used instead.

The most commonly used terms to describe the siblings’ involvement were: present/presence (10/10), participate/participation (8/10) and attend/attendance (5/10). The words present/presence and participate/participation are not specific to the topic of SAB and are likely to be found in nearly any piece of research (e.g. presence of risk factors, participants in a trial, etc.). The terms attend/attendance are more specific, but were only used by half of the studies and were therefore excluded as search terms.

Apart from the most recent study, all studies described SAB in the context of familycentred care. However, several different terms were used: family-centred (5/10), family event (5/10), family unit/unity (3/10). Due to the lack of uniformity, these terms were also rejected as search terms.

Finally, the researcher decided to proceed with the search using only the search terms sibling/siblings as well as birth/delivery. Results were limited by changing the location of the search terms (see 2.2. Literature search) rather than adding more search terms, which could potentially have excluded relevant studies.

2.2. Literature search

The literature search comprised of four search strategies: a database search, a grey literature search, a bibliography search and a secondary search after a revision of the search terms. Figure 1 (page 13) depicts the results for all search strategies based on the PRISMA reporting statement (Moher et al, 2009).

2.2.1. Database search

Due to the potential broadness of the subject area, six databases were chosen that cover literature from a variety of subject areas (midwifery, nursing, medicine, psychology and other social sciences). New Zealand specific databases were included to identify any New Zealand based research. Table 2 shows a list of all databases, in the order they were searched and the studies identified from each database.

Table 2: Database results

Name of database	Identified studies
CINAHL Complete	Anderson (1979), Daniels (1983), DelGiudice (1986), Dolinar & Mivsek (2012), Krutsky (1985), Kuramoto (2008), Lumley, (1983), Okubo et al (2008)
Cochrane Library	No additional studies identified
ProQuest Central	No additional studies identified
PubMed	Isberg & Greenberg (1987), Jouhki et al (2015a), Leonard et al (1979), Mehl et al (1977)
Index New Zealand	No additional studies identified
Australia/New Zealand reference centre	No additional studies identified

Each database was searched using the terms sibling*, or other truncation symbol, AND (birth OR delivery) as keywords. If a database did not enable a search for (birth OR delivery) the terms sibling* AND birth as well as sibling* AND delivery were searched for separately.

A cut-off point of more than 350 results was used whenever a keyword search produced a high number of results. In these cases, the results were limited to articles containing the search terms in the title of the document. If the number of results was still too high, documents with the words 'weight' and 'order' in the title (referring to 'birth weight' and 'birth order') were excluded, as these terms have no relevance to the research question.

In addition to free text searching, thesaurus searching was carried out where available. The database specific thesaurus terms for 'birth' and 'siblings' were combined and results were limited to articles which list both terms as major themes. No further studies were identified.

Citation searching, only available through CINAHL, did not identify additional studies. The 'find similar results' function, which is available through CINAHL, ProQuest Central and PubMed, led to the identification of one study in the PubMed database: Mehl et al (1977).

2.2.2. Grey literature search

The second search strategy focused on the identification of grey literature. The term grey literature describes materials not published by traditional commercial or academic sources and includes reports, theses, conference proceedings and research in progress (Ridley, 2012). The inclusion of grey literature in a systematic review greatly increases the pool of potential studies and reduces the effect of publication bias (Booth et al, 2012).

A total of 17 databases that include, or specialise in, grey literature were searched utilising the search strategy outlined above. A list of the databases including a brief description of each database can be found in Appendix A.

Three databases yielded relevant results: Google Scholar, BASE and WorldCat. Six theses were identified though Google Scholar: McGeachy (1983) Yeagly (1985), Hoyer (1984), Clancy (1985), Hubner (1980), DelGiudice (1984). One more thesis was identified using the "find similar results" function: Issokson (1990). A citation search yielded no additional relevant results. The BASE database procured one thesis in Japanese: Sugawara (2008). An additional two theses were identified through WorldCat: Bernhard (1981) and Shea and Webster (1990).

2.2.3. Bibliography search

The third part of the search strategy consisted of a bibliography search. Reference lists of all identified studies were searched for further relevant studies. This led to the identification of two more theses: Anderson (1983) and Fragner (1979) cited in Issokson (1990), as well as two published studies: Anderson (1981) and Anderson and Brown (1979), cited in Lumley (1983).

2.2.4. Secondary search using revised search terms

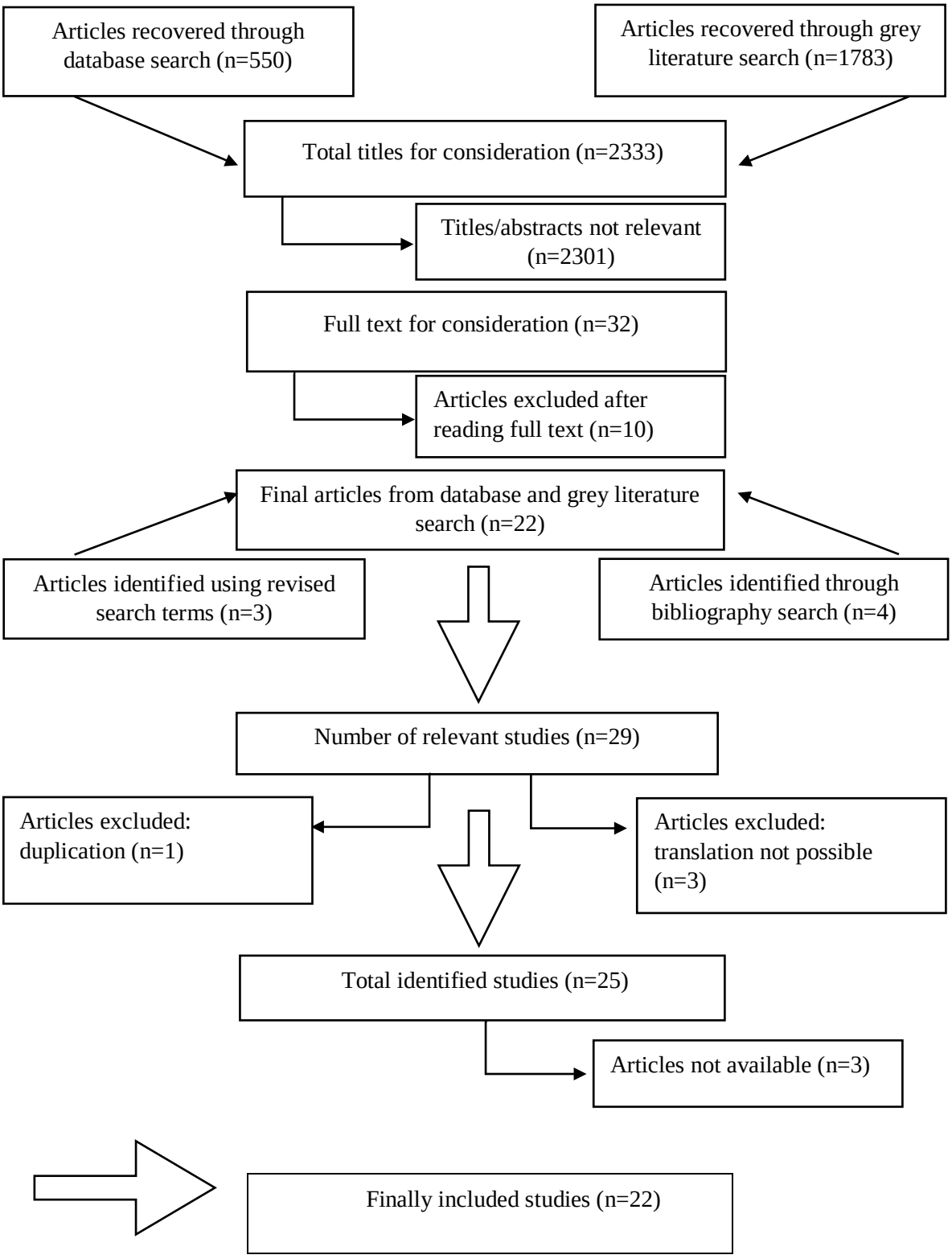
Upon completion of the primary search, the effectiveness of the search terms was reviewed. Fragner (1979) does not use the word 'siblings' in the title of her thesis, instead she uses 'children'. Substituting the word 'children' for 'siblings' in all databases, would have generated an unmanageable number of results. Furthermore, the citation and 'find similar results' features would likely have identified any published studies. Therefore, the decision was made to search only those grey literature databases, which had provided results in the primary search using the search terms children AND birth. This led to the

identification of three more theses through the WorldCat database: Cassidy (2001), Hammond (1986) and Tumpson (1979).

2.2.5. Summary of search results

The search identified a total of 29 relevant studies (another ten publications were excluded after reading the full text article, as they transpired to be opinion pieces or case reports). One study (Anderson, 1979) was excluded as it was a duplicate publication of another study (Anderson & Brown, 1979) and three studies were excluded, because translation into English was not possible (Dolinar & Mivsek, 2012; Kuramoto, 2008; Saguwara, 2008). Another three studies (Cassidy, 2001; Tumpson, 1979; Yeagly, 1985) were not included, because the researcher was unable to gain access after requesting the studies through two university libraries and attempting to contact the authors via telephone, email, or 'Linkedin' account. The resulting 22 studies were finally included in the review. Figure 1 displays the systematic search results in more detail.

Figure 1: Systematic search results



2.3. Data evaluation and extraction

In preparation for quality assessment and data extraction, each article was read attentively. Notes were taken on the methodology used, and a rudimentary thematic analysis of the findings of each study took place. Data evaluation and extraction then occurred in a single step process, but will be presented separately for purposes of clarity and ease.

2.3.1. Data evaluation

A systematic approach to data evaluation served as a further step to reduce bias in the review process. As was anticipated, the sample included qualitative, quantitative and mixed methods approaches. The data evaluation process was further complicated by the fact, that many studies took place 20 - 30 years ago, when research publications were not necessarily bound to reporting standards.

When choosing a quality assessment tool, initially tools specific to each type of methodology were taken into consideration, such as the NICE quality appraisal checklists (NICE, 2012), as generic quality assessment tools have been criticised for their generalist nature of items and lack of summary scores (Katrak, Bialocerkowski, Massy-Westropp, Kumar & Grimmer, 2004). However, the researcher came to the realisation, that using several different quality assessment tools would undermine the transparency of the quality assessment outcome. A clear, systematic and unified approach to quality assessment was deemed vital in regards to the large percentage of non-peer reviewed articles in this review.

Finally, the CCAT: Crowe Critical Appraisal Tool (Crowe, 2013) was chosen, as it has undergone validity and reliability testing (Crowe, Sheppard & Campbell, 2011) and features a scoring system, which allows readers to easily grasp the overall quality of the studies. Most importantly the CCAT tool encourages in-depth and design specific assessment of each study. In contrast, other generic quality assessment tools appeared too brief, such as the MMAT (Pluye et al, 2011), which only allocates two screening questions followed by four design specific questions.

The effectiveness of the quality assessment process was confirmed by an independent researcher with expertise in systematic literature reviews, who scrutinised a small sample of quality assessments, judged them to have been correctly carried out and confirmed the summary score.

The goal of quality assessment in this review, was not the exclusion of studies based on methodological strength, which would contradict the aim of the research to synthesis all available findings on the topic of SAB. Instead, quality assessment informed the analysis of the findings and the discussion on future research approaches.

2.3.2. Data extraction

The process of data extraction made use of three extraction techniques. Firstly, succinct information on each study was collected in a table format (see Appendix B). Secondly the studies' findings were documented on flash cards in relation to specific areas of interest that were collected as part of a thematic analysis of the findings during the initial reading of the studies. Each flash card was headed by the area of interest (e.g.: why do families choose SAB?), the author's name, the date of the publication and the page number corresponding to the finding. Findings that did not easily correspond to an area of interest were titled: 'other'. Lastly, important points raised in the introduction or discussion of each study were noted in a word document.

2.4. Data analysis and synthesis

Data analysis and synthesis followed a narrative synthesis approach, which is particularly suited when reviewing diverse studies (Popay et al, 2006; Ridley, 2012). Booth et al. (2012) describe narrative synthesis as:

"A method of synthesis that primarily uses words and text to summarise the findings of multiple studies. It is therefore a process of synthesising primary studies to explore heterogeneity descriptively rather than statistically" (Booth et al., 2012, p.147).

When compared to statistical approaches to data analysis, narrative analysis has been criticised as lacking methodological rigour and de-emphasising the importance of the quality assessment process (Popay et al, 2006). With the intention to increase the reliability of the narrative synthesis method, Popay et al. (2006) propose a systematic and transparent approach, consisting of four main elements: developing a theory, developing a preliminary synthesis, exploring relationships in the data and assessing the robustness of the synthesis.

Developing a theory pertains to the problem identification stage. During the **development of a preliminary synthesis**, data is organised and sorted into patterns through comparing

and contrasting findings. Preliminary synthesis in this review was achieved through grouping flash cards per the corresponding area of interest. Some cards were shuffled repeatedly and received new headings, until all extracted findings were grouped in a meaningful way. This process involved repeatedly accessing the original studies, to ascertain the comprehensiveness of the extracted finding and to search out additional information as new areas of interest questions became evident. At the end of this process, 18 different areas of interest were identified, and three overarching themes relating to different time periods emerged: preparing for SAB, experiencing SAB and life after SAB. **Exploring relationships with and between studies** involves searching for possible factors, e.g. in the study setting or methodology, that can provide an explanation to a study's finding or to the differences in findings amongst different studies. In the last stage of data analysis, the **robustness of the synthesis** is reviewed. Here, the impact of the quality of the included studies on the review findings is analysed, as well as the quality of the review process itself.

2.5. Presentation of results

The results of the review are presented in a descriptive manner in chapter four, using the three overarching themes as a reporting framework. Beforehand, an overview of the included studies is given in the following chapter.

Chapter three

SUMMARY OF INCLUDED STUDIES

This chapter summarises the publication details, settings, methodology, quality assessment scores, main objectives and conclusions of the included studies.

1. Publications details and settings

As outlined in the introduction, most of the research on sibling attended birth (SAB) is relatively dated. Of the 22 included studies, four were published in the 1970's, 14 were published in the 1980's, two in the 1990's, and two after the year 2000. Half of the studies are unpublished dissertations, the other half are published, nine in journals and two as book chapters.

Nearly all studies were undertaken in the United States. One study took place in each of Australia, Finland and Japan. Only eight studies reported on the participants' ethnicities: participants were mainly white, with a small percentage of black, Hispanic and Asian participants. The participants in one study (Daniels, 1983) were more ethnically diverse: 14 out of 24 families were white and ten black.

Children were the primary subjects/informants in eight studies, though parents usually contributed demographic and other background data. Parents were the sole participants in seven studies. However, two of these studies only utilised parental assessments of their children's behaviour postpartum and thus did not investigate the parents' experience of SAB. Seven studies included both parents and children as primary participants.

The age range of the children spanned from 1-18 years old. Most studies included children with a wide age range, from early childhood to adolescence in 13 studies and from school-age to adolescence in two studies. Younger children with a narrower age range participated in six studies. One author (Anderson, 1981) did not specify the participating children's ages.

Depending on the research approach taken, sample sizes ranged from five to 100 participants. Some studies counted each child as one subject, others counted one parent or both parents as one subject and some studies counted the whole family as one subject. Table three shows the number of children included in each study, to enable a more direct

comparison between studies, even though this number does not match the number of subjects in every study.

Of the 22 studies, nine included more than one birth setting (e.g. birthing unit and hospital births). In four studies, all births took place at home and in three studies all births took place in a birthing unit. Hospitals were the sole place of birth in six studies.

Table 3: Included studies: Publication details, settings and participants

	Publication Details[1]				Birth Setting[2]				Main Participants			Children[3]	
	Th	J	B	Cntry	Home	Hosp	B.U.	Mixed	Child	Parents	Both	Age	No
Anderson, 1981			*	U.S.	*				*			-	58
Anderson, 1983	*			U.S.				*	*			6-12	14
Anderson & Brown, 1979			*	U.S.	*						*	1-16	82
Bernhard, 1981	*			U.S.				*			*	1-12	56
Clancy, 1985	*			U.S.				*		*		2-6	50
Daniels, 1983		*		U.S.		*					*	2-15	35
DelGuidice, 1984	*			U.S.		*				*		2-13	35
DelGiudice, 1986		*		U.S.		*				*		2-16	28
Fragner, 1979	*			U.S.				*			*	2-12	15
Hammond, 1986	*			U.S.		*			*			6-9	5
Hoyer, 1984	*			U.S.			*				*	2-4	86
Hubner, 1980	*			U.S.				*	*			3-5	10
Isberg & Greenberg, 1987		*		U.S.		*					*	2-17	27
Issokson, 1990	*			U.S.				*	*			5-7	12
Jouki et al, 2015		*		FIN	*				*			5-17	7
Krutsky, 1985		*		U.S.		*				*		2-18	30
Leonard et al, 1979		*		U.S.			*		*			1-14	40
Lumley, 1983		*		AUS			*			*		1-4	100
McGeachy, 1983	*			U.S.				*		*		2-12	46
Mehl et al, 1977		*		U.S.	*						*	2-14	20
Okubo et al, 2008		*		JAP				*	*			2-12	24
Shea & Webster, 1990	*			U.S.				*		*		1-19	102
Total	11	9	2		4	6	3	9	8	7	7		

[1] Th. = unpublished thesis, J.= journal article, B = book chapter

[2] Home = homebirth, Hosp = hospital, B.U.= birthing unit, Mixed = more than one birth setting

[3] Age = Age-range, No = number of children

2. Methodology

Convenience sampling was used in all but one of the studies, which used maximum variation sampling instead (Fragner, 1979). Recruitment of participants generally occurred through contacting pregnancy and birth care providers or facilitators of sibling preparation classes. Those studies evaluating SAB programs generally recruited a specified number of families who were amongst the first to take up the SAB program.

Much of the research used a qualitative design. Many studies did not state which qualitative approach was used. Those that did, most commonly used a phenomenological approach. Data were generally gathered through interviews. Some qualitative studies also used questionnaires, observation, or children's drawings as data collection tools. Qualitative studies generally utilised thematic analysis of the findings, fewer studies analysed findings descriptively.

Four studies utilised a quantitative research design, three of these are survey studies, which included only closed questions, checklists or tools. Checklists were mainly used to collect data on children's behaviour. The term 'tools' refers to validated research tools, mostly used to assess differences in parenting approaches. One study used a quasi-experimental design (Hoyer, 1984), collecting data through observation as well as checklists and tools.

Five studies employed a mixed methods approach, which consisted of combining interviews with checklists and tools, or including open-ended questions in questionnaires. Analysis in these studies was generally statistically driven, with qualitative data only used to supplement the statistical analysis. A more detailed account of each study's methodology can be found in Appendix B.

Table 4: Included studies - Methodology

	Design			Data collection method [1]					Data analysis [2]			Non-SAB comparison
	Qual	Quant	Mix.	Int.	Obs.	Chk	Art	Quest.	Them.	Stats	Descript.	Y or N
Anderson, 1981	*			*			*		*			Y
Anderson, 1983	*			*					*			N
Anderson & Brown, 1979			*	*		*					*	Y
Bernhard, 1981			*	*		*				*		Y
Clancy, 1985		*				*		*		*		Y
Daniels, 1983	*			*	*				*			N
DelGuidice, 1984	*							*	*			Y
DelGiudice, 1986		*				*		*		*		N
Fragner, 1979	*			*	*				*			N
Hammond, 1986	*			*							*	N
Hoyer, 1984			*		*	*				*		N
Hubner, 1980			*	*		*				*		N
Isberg & Greenberg, 1987	*			*							*	N
Issokson, 1990	*			*					*			N
Jouki et al, 2015	*			*			*		*			N
Krutsky, 1985	*			*					*			N
Leonard et al, 1979	*				*						*	N
Lumley, 1983		*				*		*		*		Y
McGeachy, 1983		*				*		*		*		Y
Mehl et al, 1977	*			*	*				*			Y
Okubo et al, 2008	*			*			*		*			N
Shea & Webster, 1990			*					*	*			N
Total	13	4	5	14	5	8	3	6	11	7	4	Y=8 N=14

[1] Int.= interview, Obs. = observation, Chk = checklists and tools, Art = children's drawings, Quest. = questionnaire

[2] Thematic (Them) = formation of categories and/or themes
Descriptive Descript) = data analysis does not go beyond a description of the data
Statistical (Stats) = use of simple or more advanced statistical analysis

3. Main objectives, study conclusions and quality assessment

The main objective of much of the research related to the children's experience of SAB. Another focus was the children's behaviour after the birth in relation to the expression of sibling rivalry, which generally included a comparison between children who did and did not experience SAB. How families chose to have a SAB, planning and preparation and the parents' experience of the birth also received considerable research attention.

Three studies focused on areas outside of these main objectives. Hubner (1985) researched children's understanding of concepts of procreation and DelGiudice (1984) and Shea and Webster (1990) focused on factors that hinder or facilitate the SAB experience.

Overall, the body of research presents the concept of SAB in a positive light and identifies clear benefits inherent in the experience. Three studies concluded that no tangible benefits or detrimental effects have been identified and assume a neutral stance. Another three studies conclude that findings point towards a detrimental effect of the SAB experience and lean towards a negative assessment of SAB. Isberg and Greenberg (1987) based this conclusion mainly on negative emotions expressed by children. Leonard et al (1979) concluded that children seemed to resume normal behaviour soon after birth and therefore viewed birth as primarily an adult event. The third study (Hoyer, 1984) based the negative conclusion on a higher incidence of negative behaviour postnatally in children who were present during birth. No study found evidence of severe distress, anxiety or trauma in children attending births and therefore no study clearly concludes that SAB is a negative experience for children or other family members.

Quality assessment scores ranged from 14 to 38 out of 40 possible points on the CCAT tool, with a mean score of 29. Eleven studies scored between 30-40 points, eight studies between 20-30 points and three studies scored between 10-20 points.
More detail on each study's quality assessment score, including strengths and limitations is listed in Appendix B.

Table 5. Included studies: Main objectives, study conclusions and quality assessment

	Main Objective					Conclusion SAB				CCAT Score/40		
	Child Exp.	Parents' Exp.	Sibling Rivalry	Plans/ Prep	Other	Pos.	Mainly Pos.	Neut.	Neg.	10-20	20-30	30-40
Anderson, 1981	*					*				*		
Anderson, 1983	*						*					*
Anderson & Brown, 1979	*	*	*	*		*					*	
Bernhard, 1981			*					*				*
Clancy, 1985			*				*					*
Daniels, 1983	*							*		*		
DelGiudice, 1984	*	*		*	*	*					*	
DelGiudice, 1986			*			*					*	
Fragner, 1979	*	*		*			*					*
Hammond, 1986	*					*						*
Hoyer, 1984			*						*			*
Hubner, 1980					*		*				*	
Isberg & Greenberg, 1987	*	*		*					*		*	
Issokson, 1990	*						*					*
Jouki et al, 2015	*						*					*
Krutsky, 1985		*		*		*					*	
Leonard et al, 1979	*								*	*		
Lumley, 1983			*	*				*			*	
McGeachy, 1983			*	*			*					*
Mehl et al, 1977	*	*		*		*					*	
Okubo et al, 2008	*						*					*
Shea & Webster, 1990					*	*						*
Total	13	6	7	8	3	8	8	3	3	3	8	11

This chapter outlined the core components of the included studies, setting the scene for an in-depth exploration of the findings in the following chapter.

Chapter four
FINDINGS

Analysis of the findings from the studies revealed a total of eighteen distinct areas of interest relating to the sibling attended birth (SAB) experience. Most research attention was paid to the families' motivations for choosing SAB, the preparation for the event, and the impact of SAB on children. Various other aspects of the experience were addressed by a smaller number of researchers. In combination, findings from both well- researched and lesser- researched areas of interest provide a rather comprehensive picture of the SAB experience as a whole.

Using a narrative synthesis approach, findings are presented as they relate to each area of interest, grouped under the three overarching themes: 'planning and preparing for SAB', 'experiencing SAB' and 'life after SAB'**.** Table 6 displays the various areas of interest with the number of studies that contributed findings in each area.

Table 6: Areas of interest and number of corresponding studies

Planning and preparing for SAB	
Why do families choose SAB?	**11***
Why do families choose not to have a SAB?	**3**
How do families decide for or against SAB?	**7**
Is there are difference between families who do and do not choose SAB?	**9**
How are children prepared for birth?	**12**
Do families choose a support person for their children? How is the support person chosen?	**12**
Experiencing SAB	
How do parents experience SAB?	**7**
How do children experience SAB?	**17**
How do midwives experience SAB?	**1**
What factors influence the SAB experience?	**13**
How do families experience SAB when there are complications?	**6**
What factors prevent children from attending a planned SAB?	**8**

Life after SAB	
What do children learn about birth?	**7**
Does SAB influence children's attitudes about birth?	**7**
What advice would children who experienced SAB give other children?	**5**
Does SAB impact on children's behaviour after the birth?	**11**
What impact does SAB have on other interfamilial relationships?	**2**
What activities do families engage in to consolidate the experience?	**4**

*8 studies from the parent's perspective, 1 study from the parent and the children's perspective, 3 studies from the children's perspective: Total 11 studies

1. Planning and preparing for sibling attended birth

Planning and preparing for a SAB for many families involved multiple decision making processes and preparatory activities. The review surfaced six main areas of interest in relation to the time prior to birthing, which are addressed in the following section.

1.1.Why do families choose sibling attended birth?

Families' motivations for choosing a SAB have received considerable attention in the literature. Two main motivations were evident in all eight studies investigating this aspect of SAB from the parent's perspective: strengthening family unity and supporting the child's development. (Bernhardt, 1981; Daniels, 1983; DelGiudice, 1984; Fragner, 1979; Isberg & Greenberg, 1987; Isssokson, 1990; Krutsky, 1985; McGeachy, 1983). Strengthening family unity was achieved mainly through sharing an important life experience (Bernhardt, 1981; Daniels, 1983; DelGiudice, 1984; Fragner, 1979; Isberg & Greenberg, 1987; Krutsky, 1985; McGeachy, 1983), helping children feel included in the experience (Daniels, 1983; Isberg & Greenberg, 1987; McGeachy, 1983) and through avoiding parent-child separation (Bernhardt, 1981; Fragner, 1979). Many families hoped that strengthening family unity through SAB would also increase sibling bonding and reduce sibling rivalry (DelGiudice, 1984; Fragner, 1979; Isberg & Greenberg, 1987; McGeachy, 1983).

Supporting the child's development was mainly achieved through teaching children about birth. Sibling attended birth was viewed by most families as part of ongoing sex education, while a smaller number of families hoped SAB could be used as a substitute for sex education (Bernhard, 1981; Daniels, 1983; DelGiudice, 1984; Fragner, 1979; Hammond, 1986, Isberg & Greenberg, 1987; McGeachy, 1983). Some parents hoped SAB could teach children about the reality of having a baby and could prepare them for their own future birth experiences (Daniels, 1983; Fragner, 1979). Fragner (1979) described parents' motivation to go beyond teaching factual information and to include teaching life values and positive gender identification.

Some families reported being very close and therefore viewed SAB as a natural extension of their family's lifestyle (Daniels, 1983; Fragner, 1979; Isberg & Greenberg, 1987), while others hoped including children at birth would provide the opportunity for deeper family bonding, for example in step families (Daniels, 1983; Fragner, 1979; Isberg & Greenberg, 1987; McGeachy, 1983).

Interpersonal reasons for choosing SAB were reported in a smaller number of studies (Fragner, 1979; Isberg & Greenberg, 1987; Issokson, 1990). Mainly, mothers hoped children would be able to provide a source of comfort during labour by providing support or distraction during contractions, or simply by being present. Some parents talked about their own, negative, experiences of becoming a sibling and learning about birth. They hoped attending the birth would help their children avoid these experiences (Fragner, 1979; Isberg & Greenberg, 1987).

The process of choosing SAB has also been addressed from the children's perspective (Anderson, 1983, Hammond, 1986; Isberg & Greenberg, 1987, Jouhki et al, 2015a). Children in two studies (Anderson, 1983; Hammond, 1986) reported that it was important for them to learn about, and experience birth. They were aware, that birth is a rare and special event and felt strongly that they did not want to miss the experience, in particular the moment of birth. These children ranked attending the birth as first or second on a list of important experiences, such as Christmas or birthday parties. Jouhki et al (2015a) reported that children wanted to be present at the birth and regarded it as a natural, obvious thing to do. In contrast Isberg and Greenberg (1987) deduced from interviewing children

before attending the birth, that children did not seem to understand what the experience would entail and seemed reluctant to talk about birth.

1.2.Why do families choose not to have a sibling attended birth?

Studies that addressed motivations behind not choosing SAB, provided additional insight into families' decision making processes (Bernhard, 1981; Daniels, 1986; McGeachy, 1983). McGeachy (1983) surveyed families who did (n=21) and did not (n=26) choose SAB and found that 56 percent of the families who did not choose SAB had heard about it and 40 percent would consider it for a future birth. It is important to note, that the response rate for the families who did not choose SAB was rather low (41 percent) and possibly favoured those families who had some interest in SAB.

Main reasons behind deciding against SAB were a perception that the children were too young, or that the presence of the children might create an unwanted distraction during birth (Bernhard, 1981; Daniels, 1983; McGeachy, 1983). Some children in McGeachy's and Daniels' studies decided for themselves that they did not want to attend. Parents also described fearing that the experience would be too frightening for the child, not wanting the child to see the mother in pain, and worrying about the potential for complications or caesarean section (Bernhard, 1981; McGeachy, 1983). Parents in McGeachy's study added that they were afraid of long-term consequences of witnessing birth, felt the baby deserved the parents' undivided attention and worried that children would blame the baby for causing the mother pain. Inability to adequately prepare the child for birth (Bernhard, 1981) and reluctance from fathers (Daniels, 1983) were also described as potential inhibiting factors for SAB.

1.3. How do families decide for or against sibling attended birth?

Insight into how families chose to have a SAB is provided by seven studies (Daniels, 1983;
DelGiudice, 1984; Fragner, 1979; Isberg & Greenberg, 1987; Krutsky, 1985; McGeachy, 1983; Shea & Webster, 1990). Few families did not actively decide to have a SAB, either because a homebirth was planned, and the children's presence was viewed as a natural component of the birth (Fragner, 1979; Shea & Webster, 1990), or because the family had

always known they would have a SAB, in congruence with their family lifestyle (Daniels, 1986; Fragner, 1979; Isberg & Greenberg, 1987). For most of the families, choosing SAB involved active decision making.

Isberg and Greenberg (1987) found women to be the main decision makers when it came to the children's involvement. This finding was supported by Krutsky (1985), who found that mothers were not influenced by fathers, but fathers were influenced by mothers during decision-making. Other influencing factors were books, articles and advice from family, friends and health professionals (DelGiudice, 1984; Fragner, 1979; Krutsky, 1985; Shea & Webster, 1990).

Families took many variables into consideration during the decision-making process, as they tried to ascertain that the decision for SAB was right for their circumstances. Factors included the age and individual character of the children (DelGiudice, 1984; Fagner, 1979; McGeachy, 1983), the children's wish to be included (DelGiudice, 1984; Krutsky, 1985; McGeachy, 1983), the availability of an appropriate support person (Krutsky, 1985) and the normalcy of prior births as well as the woman's ability to cope during labour (DelGiudice, 1984).

The woman's prior births influenced the decision for SAB in two ways; some mothers reported feeling very positive about their last births and wanted to share this with their children (DelGiudice, 1984; Fragner, 1979; Isberg & Greenberg, 1987), while other mothers felt disappointed with their prior births, mainly due to unnecessary medicalisation, and therefore wanted to try a new approach (DelGiudice, 1984; Fragner, 1979). Once the decision for a SAB was made, it in turn influenced other decisions, particularly in regards to the place of birth and care provider (Fragner, 1979; Shea & Webster, 1990).

1.4.Is there a difference between families who do and do not choose sibling attended birth?

Given that the inclusion of children at birth has not been a part of the current mainstream birthing culture in the western world, some researchers attempted to discern differences between those families who chose SAB and those who did not (Anderson & Brown, 1979; Bernhard, 1981; Clancy, 1985; McGeachy, 1983; Mehl et al, 1977). Anderson and Brown (1979), Bernhard (1981), Clancy (1985) and McGeachy (1983) did not find any statistically significant differences in demographic markers such as age, income, ethnicity or level of education.

Bernhard (1981) compared families who did and families who did not choose SAB using a tool called the Family Environment Rating Scale (Moos, 1976 cited in Bernhard, 1981), which aims to assess a family's individual personality in nine clusters (cohesion, conflict, expressiveness, independence, achievement orientation, intellectual-cultural orientation, recreational orientation, moral-religious emphasis and organisation). Families who chose SAB were more likely to openly express anger and aggression within the family (p-value = 0.001). Differences were also noted in the cohesion and moral-religious clusters, but were not statistically significant. Families who chose SAB tended to exhibit less interfamilial cohesion (p-value = 0.067). The author links this finding to some families' motivation to increase family unity through SAB, as is the case in step-families. Families who did not choose SAB, tended to have more traditional values compared to families who included children at birth (p-value = 0.074). This finding is echoed by McGeachy (1983) who compared families using a tool to assess the modernity in parenting of the two groups. Families who chose SAB scored significantly higher (p-value < 0.05), signalling a more modern approach to parenting.

Using semi-structured interviews with parents who did and did not choose SAB, Mehl et al (1977) discovered a more relaxed and open-minded viewpoint on sexuality and nudity in those families who chose SAB. Comfort with nudity was also more common in parents choosing SAB in the survey study by Anderson and Brown's (1979), but statistical analysis was not performed.

Some authors have reported a higher incidence of girls experiencing SAB than boys (Anderson, 1983; Bernhard, 1981; Daniels, 1983; DelGiudice, 1986; Fragner, 1979; Hammond, 1986; Hubner, 1980; Isberg & Greenberg, 1987; Issokson, 1990; Leonard et al, 1979; Lumley, 1983; Shea & Webster, 1990). A significant difference (p-value = 0.05) with respect to gender was reported by Bernhard (1981). Five other studies (Daniels, 1983; Hubner, 1980; Isberg & Greenberg, 1987; Leonard et al, 1979; Lumley, 1983) also reported a notably higher incidence of girls (more than two-thirds of the sample) but did not employ statistical analysis. More boys than girls was only reported in five studies (Anderson, 1981; Clancy, 1985; Hoyer, 1984; Krutsky, 1985; Okubo et al, 2008). The remaining studies did not specify the children's sex. It is important to take into consideration, that nearly all the studies utilised convenience sampling, which could mean a preponderance of girls is a chance finding. One mother described that initially she felt it more important to teach her daughters about birth than her sons. She later changed her mind to include her sons at the birth as well (Fragner,1979). Such thinking may have influenced other parent's decisions about SAB as well.

Differences between families who chose SAB and those who did not, have also been noted in terms of the extent of the preparation children received before the birth. Anderson and Brown (1979) found that families who planned to include their children at birth involved their children earlier on in the pregnancy, in some cases even before conception, whereas families who did not plan to include their children waited longer to involve their children. Children who planned a SAB were also better prepared for the birth. A statistical analysis was not performed. Clancy (1985) found that children who went on to attend the birth, had felt the baby move in the mother's abdomen earlier compared to children not included at birth (p-value < 0.05). Clancy (1985) and McGeachy (1983) reported a statistically significant difference (p-value < 0.05) in the number of preparatory resources used in families who planned to include their children at birth compared to those who did not. Lumley (1983) on the other hand found no statistically significant difference in how one to four year olds were prepared for the baby.

1.5.How are children prepared for birth?

Families who plan to include their children at birth put a lot of time and effort into preparing their children for the experience. Very few families reported not preparing their children for birth, either because the child was considered too young for preparation (Lumley, 1983) or because the children already had a thorough understanding of birth (Issokson, 1990). The importance behind preparing children for birth was expressed by parents in Shea and Webster's survey study (1990), who believed that preparation allowed children to know what to expect and gave children control over their level of participation.

The materials most commonly used in preparation were books, pictures and films, followed by audio tapes, birthing dolls (Clancy, 1985; Hubner, 1980, Issokson, 1990; Fragner, 1979; Shea & Webster, 1990) and photographs of the child's own birth or babyhood (Clancy, 1985; Issokson, 1990; Shea & Webster, 1990). In addition, many children accompanied their mothers to antenatal appointments, visited the birthing unit or hospital, or attended childbirth preparation classes with their parents (Anderson & Brown, 1979; Clancy, 1985; Fragner, 1979; Hoyer, 1984; Huber, 1980; Issokson, 1990; Shea & Webster, 1990). Specific preparation classes aimed at children planning SAB were mentioned in nine studies (Daniels, 1983; DelGiudice, 1984; Fragner, 1979; Hoyer, 1984; Hubner, 1980; Issokson, 1990; Leonard et al, 1979; McGeachy, 1983; Shea & Webster, 1990). Some classes were offered by hospitals or birthing units and in some cases attendance at the classes served as a prerequisite for a SAB. Other classes were offered by midwives or childbirth educators to all families planning a SAB.

Beside teaching children factual information about birth, parents prepared their children for the reality of the experience by openly discussing emotional and physical aspects of birth, practicing breathing exercises and labour vocalisations with their children and introducing the notion of nudity in families where this had not been the norm (Fragner, 1979; Issokson, 1990; Hubner, 1980; Shea & Webster, 1990). One mother in Fragner's (1979) study stressed the necessity of not putting too much emphasis on preparing children for the birth, and instead portraying the birth in the context of the entire life changing situation of having a new baby join the family.

Shea and Webster (1990) asked parents what they thought was most helpful in preparing their children for the birth. Most commonly parents expressed that exposure to the sensory elements of birth was the most helpful, followed by watching films about labour and birth, gaining knowledge of the birth process, hands on participation during sibling preparation classes and the use of visual aids such as books. In this study 94 percent of parents (n=63) felt their children were adequately prepared for the experience. Those that did not feel preparation was adequate, wished they had prepared their children better for the possibility of complications or changes in the birth plan. Anderson and Brown (1979) and DelGiudice (1984) found that parents wished they had prepared their children better for the presence of blood. Parents in Fragner's (1979) study felt children should have been better prepared for the noises the mother makes in labour and her unavailability to the children.

The level of participation health professionals and birth facilities had in the children's preparation was also reported on by Shea and Webster (1990). Fifty-nine percent of parents (n=63) reported that health professionals participated in the preparation, mainly through discussing elements of the birth and by including children in antenatal care. In 64 percent of cases (n =63) the birth facility participated in the preparation as well, by providing a tour of the facility or offering sibling preparation classes.

1.6.Do families choose a support person for their children? How is the support person chosen?

The presence of a designated support person to care for children attending a birth has the potential to shape the family's experience of the birth. However, only twelve of the studies clearly stated whether a support person was present at the births. Those studies that reported on births taking place in specific hospitals or birthing units all stated that the presence of a designated support person was a pre-requisite for having a SAB at the facility (Daniels, 1983; Hoyer, 1984; Isberg & Greenberg, 1987; Krutsky, 1985; Leonard, 1979; Lumley, 1983; McGeachy, 1983). There appears to be a degree of leniency to this rule in some hospitals, as support person presence differed amongst studies, ranging from 60 to 100 percent.

Those studies that reported on the presence of support people outside of a pre-set requirement, for example studies including homebirths, also reported different rates of support person presence, ranging from 28 to 90 percent (Anderson & Brown, 1979; Fragner, 1979; Hammond, 1986; Issokson, 1990; Shea & Webster, 1990).

It appears that almost all families planned to have a support person present, but in some cases this person was not able to make it to the birth in time (Fragner, 1979; Hammond, 1986; Issokson, 1990; Shea & Webster, 1990). The lowest rate of support person presence (28 percent) was reported by Anderson and Brown (1979) who found that in ten percent of the families (n=25) the father acted as the main support person for the children, and in six percent the labouring mother took on this role. This is an isolated finding, which may be explained by the fact that the study was amongst the first on the subject of SAB, at a time when little guidance on how to enhance the experience was available.

Elements of the decision-making process of choosing a support person were illuminated by Fragner (1979), Krutsky (1985) and Shea and Webster (1990). Shea and Webster (1990) found a close and comfortable relationship between the adult and the child to be the strongest influencing factors in choosing a support person. This was followed by the availability of the person, their knowledge of birth, their responsiveness to the child's needs and the inherent confidence and trust between parent and support person. Some parents also placed importance on the support person's willingness to leave the birthing room should the need arise, a similar philosophy of birth and personal characteristics of the person. In contrast Krutsky (1985) found the main reason for choosing a support person was the person's wish to be included in the birth and the person being a close friend of the family. Additionally, the person's availability and their way of relating to the child were considered. A small number of children chose their support person themselves. Fragner
(1979) found parents considered the potential support person's personality, their attitude towards birth and their relationship with the child when deciding who should act as a support person.

Most of the support people were either female relatives (mainly aunts and grandmothers), or female friends of the family. Some families also asked the children's teachers or male

relatives or friends to act as support people (Daniels, 1983; Fragner, 1979: Hammond, 1986; Hoyer, 1984; Issokson, 1990; Krutsky, 1985; Shea & Webster, 1990). A few of the mothers reported having difficulties finding a support person and receiving some negative comments about their plan to include the children at birth when approaching potential support people (Daniels, 1983).

In summary, most families are drawn to SAB out of a desire for family unity and increased learning opportunities for the children. Choosing SAB is often preceded by extensive decision making processes. Preparation for the experience focuses on increasing the children's level of understanding of birth and includes the selection of an appropriate support person for the children. The next section discusses how families experience SAB.

2. Experiencing sibling attended birth

Sibling attended birth is a profound experience for all family members. This section discusses eight areas of interest relating to the different family member's experience of birth, as well as factors that influence the experience and reasons for non-attendance at planned SABs.

2.1.How do parents experience sibling attended birth?

Overall, parents rated their experience of SAB positively, and almost all agreed that they would include their children again, should there be another birth in the family (DelGiudice, 1984; Krutsky, 1985; McGeachy, 1983, Shea & Webster, 1990).

Overwhelmingly, mothers reported that the presence of their children had a positive effect on their birth experience (Daniels, 1983; DelGiudice, 1984; Fragner, 1979; Isberg & Greenberg, 1987; Krutsky, 1985). Mothers expressed feeling a sense of family unity (Krutsky, 1985) and feeling close to their children (Daniels, 1983). One mother reported feeling distant from her child during the labour, the opposite of what she had hoped to feel (Krutsky, 1985). The awareness mothers had of their child's presence ranged from only noticing the child after the birth, to having a general group awareness of the child, to being aware of the child actively supporting the mother (Krutsky, 1985). The support that

children provided to their mothers was generally perceived as helpful (Daniels, 1983; Fragner, 1979; Krutsky, 1985). One mother described the way in which her child supported her as being more distracting than helpful, but nevertheless appreciated (Fragner, 1979).

Leading up to the birth, some mothers expressed worries and concerns about going through with SAB. Women were worried about the support person being late, the children being unruly, the children being frightened by blood, and the children's reaction to seeing the mother in pain (DelGiudice, 1984; Fragner, 1979). Often mothers endeavoured to moderate their behaviour during labour and birth to minimise potentially frightening situations for their children (DelGiudice, 1984; Fragner, 1979; Krutsky, 1985), for example by making an effort to talk to children during contractions (Anderson & Brown, 1979). However, women felt they themselves also benefited from 'keeping it together' as it enabled them to remain in control of their labour and birth experience (DelGiudice, 1984; Fragner, 1979; Krutsky, 1985).

Daniels (1983) found that fathers appeared more reserved and more aware of the potential for a negative outcome than mothers when discussing their experience. Frequently fathers expressed feeling relieved that all went well. Krutsky (1985) on the other hand reported that fathers' accounts of SAB were often very eloquent and moving. They portrayed the children's presence as positive and communicated feelings of family unity. A small number of fathers were not aware of the children's presence during labour and birth and therefore felt that the children's presence did not influence their experience. Fathers in DelGiudice's study (1984) emphasised that the support person's presence was essential to their experience of SAB. One father expressed feeling pulled between mother and child, as the support person was not available during the birth.

2.2.How do children experience sibling attended birth?

The children's experience of SAB has been a major focus of the research undertaken in this field, however, potential long term effects of experiencing SAB were not addressed in any of the included studies. A multitude of data on short term effects derived through

observation of children at birth, drawings, as well as interviews with children and parents allows for an in-depth exploration, which is presented under four areas of interest.

2.2.1. Children's behaviour

Aspects of children's behaviour during labour and birth were described in multiple studies. While each individual child's behaviour is different, accounts of children's behaviours overall were strikingly similar in all included studies. Children tended to spend at least some time continuing with their usual behaviour, like sleeping, eating or playing (Anderson & Brown, 1979; Hammond, 1986; Leonard et al, 1979; Lumley, 1983; Mehl et al, 1977). Often children came and went and did not stay in the birthing room for the duration of the labour and birth (Anderson & Brown, 1979; Daniels, 1983; Leonard et al, 1979; Lumley, 1983; Mehl et al, 1977). Children modulated the intensity of the experience, not only by leaving the birthing room, but also by covering ears or eyes, turning away or hiding under blankets. (Anderson, 1983; Fragner, 1979; Isberg & Greenberg, 1987; Leonard et al, 1979). Leonard et al (1979) observed that the normal coping style of the children intensified during labour; quiet children became more withdrawn while active children became louder and more energetic.

Not all children who were present during part of the labour ended up being present at the birth, though the exact number of children who remained in the room was not reported in all studies. Seven prospective studies (Fragner, 1979; Hoyer, 1984; Isberg & Greenberg, 1987; Leonard et al, 1979; Lumley, 1983; McGeachy, 1983; Okubo et al, 2008) reported on the number of children who remained in the labour room during birth; percentages ranged from 31 to 100 percent, with a mean of 57 percent (see Table 7). Isberg and Greenberg (1987) reported that the decision to leave the birthing room was made by parents or support people for children younger than five years old. Older children decided for themselves if they wanted to stay.

Table 7: Percentage of children present during the moment of birth

	Children present during labour	Children present at birth	Percentage of children present at birth
Fragner (1979)	15	15	100%
Hoyer (1984)	86	27	31%
Isberg & Greenberg (1978)	16	6	38%
Leonard et al (1979)	40	33	82%
Lumley (1983)	33	11	33%
McGeachy (1983)	21	12	57%
Okubo et al (2008)	20	12	60%
Mean Percentage			**57%**

When present in the room, some children remained in a passive role. They watched the process of labour and birth, some from afar and others close to their mothers (Anderson, 1981; Anderson, 1983; DelGiudice, 1984; Fragner, 1979; Hammond, 1986; Issokson, 1990; Leonard et al, 1979; Lumley, 1983). Other children actively supported their mother (Anderson, 1981; Anderson, 1983; Anderson & Brown, 1979; Fragner, 1979; Hammond, 1986; Jouhki et al, 2015a; Lumley, 1983; Mehl et al, 1977) by rubbing her back, helping her walk, offering food, drink or cold cloths, singing songs or coaching her through contractions. In addition, some children became involved in the labour and birth by fetching items, taking photographs, looking after younger siblings, listening to the baby's heart rate, helping to catch the baby, cutting the cord, giving the baby a gift, helping to hold, bath or dress the baby or helping to examine and dispose of the placenta (Anderson, 1981; Anderson, 1983; Anderson & Brown, 1979; Hammond, 1986, Issokson, 1990; Jouhki et al, 2015a; Lumley, 1983). Leonard et al (1979) observed that children withdrew from their mothers towards the second stage of labour and adopted an observer role, whereas Lumley (1983) observed that children became more involved in the birth during this stage of labour.

Some families planned the child's involvement in advance, by giving the child a special role or job to accomplish, while other families made no concrete plans (Fragner, 1979). In hindsight, some parents wished they had given their children more responsibilities during labour. After the birth, most children shifted their attention to the baby (Mehl et al, 1977, Leonard et al, 1979). Very few children focused their attention on the placenta or perineal repair.

Sibling bonding behaviour in the form of touch and sustained eye-contact has been reported in many SABs by several researchers (Anderson & Brown, 1979; Daniels, 1983; Fragner, 1979; Mehl et al, 1977). Some children also displayed protective behaviour, such as protesting if the baby was picked up by health care providers (Anderson, 1981; Anderson & Brown, 1979). Soon after the birth children returned to their normal activities (Fragner, 1979; Leonard et al, 1979). This finding led Leonard et al (1979) to conclude, that birth is primarily an adult event.

2.2.2. Feelings and emotions

Being present at a birth generates a mixture of emotions in anyone attending such a significant event. The same is true for children who are present at their sibling's birth. Thirteen studies reported on children's emotions during labour and birth (Anderson, 1983; Anderson & Brown, 1979; Bernhard, 1981; Daniels, 1986; DelGiudice, 1984; Hammond, 1986; Isberg & Greenberg, 1987; Fragner, 1979; Issokson, 1990; Jouhki et al, 2015a; Lumley, 1983; Mehl et al, 1977; Okubo, 2008). Emotions reported ranged from fear, concern, disgust, boredom, to anticipation, excitement, pride and joy. Analysis of the studies' findings showed that unanimously researchers reported no signs or symptoms of trauma, shock or extreme distress in any of the children included at birth.

Most studies described the leading emotion expressed by children during the labour and birth to be that of joyous anticipation and excitement. Fear, anxiety and disgust were reported as subtle and transient emotions, often tied to specific aspects of the birth (Anderson & Brown, 1979; Bernhard, 1981; Hammond, 1986; Issokson, 1990; DelGiudice, 1984; Fragner, 1979; Jouhki et al, 2015a; Mehl et al, 1977; Okubo, 2008). Children reported feeling proud to be able to participate and help during the birth of their sibling (Issokson, 1990; Jouhki et al, 2015a). They enjoyed the festive atmosphere of the event and the sense of family unity (Anderson, 1983; Issokson, 2015; Jouhki et al, 2015a, Fragner, 1979). The emergence of the baby (Anderson, 1983; Hammond, 1986; Issokson, 1990; Okubo et al, 2008; Mehl et al, 1977) and finding out the sex (Daniels, 1986; Issokson, 1990; Hammond, 1986; Jouhki et al, 2015a), were highpoints of the experience, though some children showed short-lived disappointment after learning the baby's sex

(Jouhki et al, 2015a). Children also expressed joy in holding the new baby (Anderson, 1983; Issokson, 1990).

Boredom and frustration when waiting for the baby to be born were prominent emotions expressed by children, irrespective of the length of labour (Anderson, 1983; DelGiudice, 1984; Fragner, 1979; Hammond, 1986; Issokson, 1990; Jouhki et al, 2015a). Some children saw the long waiting period as an indication of complications (Anderson, 1983).

Worries and concerns listed in the literature pertained to bleeding (Anderson ,1983; Bernhard, 1981; Daniels, 1983; Fragner, 1979; Hammond, 1986; Issokson, 1990, Okubo, et al, 2008), the mother's vocalisations (Anderson, 1983; Daniels, 1983; Fragner, 1979; Hammond, 1986; Jouhki et al, 2015a), the mother being in pain (Anderson, 1983; Hammond, 1986; Issokson, 1990; Jouhki et al, 2015a), something being wrong with the mother or the baby (Anderson, 1983; Daniels, 1983; Fragner, 1979; Jouhki et al, 2015a), the appearance of the cord, placenta (Anderson, 1983; Bernhard, Hammond, 1986) or newborn (Anderson, 1983; Issokson, 1990), episiotomy (Daniels, 1983; Fragner, 1979) and perineal repair (Daniels, 1983). Some children expressed feeling worried about how their younger siblings were coping (Fragner, 1979; Jouhki et al, 2015a) and about the birth attendant not arriving in time for the birth or making a mistake (Anderson, 1983; Fragner, 1979).

Four studies (Anderson, 1983; Daniels, 1983; Isberg & Greenberg, 1987; Lumley, 1983) did not describe positive emotions as dominant in children experiencing SAB. Isberg and Greenberg (1987) and Lumley (1983) in fact did not report any positive emotions. Lumley (1983) asked parents about their 1-4 year old children's experience of SAB using a postal questionnaire. It is not apparent whether parents did not describe positive emotions displayed by the children, or whether these were not reported in the findings. Lumley did report that about half of the children showed transient fear, concern or anxiety, but no major distress. In Isberg and Greenberg's study (1987), parents and children (aged 2-17 years old) were interviewed before and after the birth by a child psychiatrist. No positive emotions were reported. The complete lack of positive emotions indicates a potential bias in the reporting of the finding. Although no signs of trauma were found, several children

reported feelings of anxiety during the postpartum interview, which many parents did not seem to be aware of beforehand.

The two other studies (Anderson, 1983; Daniels, 1983) did report on positive emotions, but did not identify these emotions as dominant. Anderson (1983) conducted serial interviews with fourteen children aged 6-12 years old using an ethnographic approach. All children described positive emotions and stressed how important it was for them to be present during the birth. However, Anderson found that most children felt some of the events during labour and birth to be scary. Substantial fears and concerns were only voiced by the children during the later interviews, once a level of rapport had been established. For example, four of the children spoke about fearing the mother or baby would die. Other authors who interviewed children about their experience reported fewer fears and concerns (Hammond, 1985; Issokson, 1990; Jouhki et al, 2015a) which may be because children had less time to get to know the researcher and to openly express their emotions. In addition, the children in Anderson's (1983) study did not identify any adults as supporting them throughout the experience, which may partly explain the higher reporting of fears and concerns.

When interviewing children about their experience of birth, Daniels (1983) found that 20 out of 35 children aged 2-15 years old described positive emotions, such as excitement, interest or pleasure. Only five children did not describe any negative emotions, and the majority described mixed emotions. Daniels gathered that children who perceived their mothers as helpless or out of control had the most difficult experiences.

Further insight into the children's emotions can be gained by examining how parents viewed their children's experience of birth. Anderson and Brown (1979) and DelGiudice (1984) asked parents to rate their children's experience of birth. A positive rating was given by 22 out of 25 parents in Anderson and Brown's study. Two children's experiences were rated as mostly positive. One child was shocked by the amount of blood and feared the mother had died. Thorough discussions after the birth led the parents to see the birth as a positive learning experience for the child. The other child with a mostly positive experience cried softly for a brief period after being awakened late at night. The only negative rating was given by parents of a child who was present during labour. The

parents had arranged for the child to be picked up from the home, the intended place of birth, before the birth of the baby. The child reacted strongly by crying and having a temper tantrum.

DelGiudice (1984) reported positive ratings from 15 out of 28 parents. DelGiudice used quotes to illustrate positive experiences, but did not give a description of the negative experiences, other than one mother stating that her adolescent child seemed bored and the younger child was crying during the birth. This unbalanced reporting of findings suggests a degree of reporting bias.

2.2.3. How children view adults at birth

When describing their experiences of SAB, children not only described their own emotions and behaviours, but also the behaviour of the mother, father, midwives and other adults present at birth.

Children viewed their mothers as working hard during labour and birth. They were aware of the mother's inability to be fully available to them and were impressed and proud of her efforts (Anderson, 1983; Hammond, 1983; Issokson, 1990; Okubo et al, 2008).

Description of the father's role was more differentiated. Some children saw their fathers as unavailable to them, whereas other children described their fathers in an organising role, telling children what to do and how to behave (Anderson, 1983). Then again, some children described their fathers as a source of support (Hammond, 1986). The father was also seen as supporting the mother during the birth and in some cases children described their father as actively participating in the birth (Anderson, 1983; Fragner, 1979; Hammond, 1986; Issokson, 1990).

The midwife was described as supporting the mother, looking after the mother and the baby and being actively involved in the birth. In some instances, children described the midwife as relating to the children (Anderson, 1983; Hammond, 1986).

Support people also featured in some of the children's recollections. Children talked about playing with the support person and receiving support in the form of explanation or physical contact (Issokson, 1990; Fragner, 1979). Similarly, children in Jouhki et al's (2015a) study expressed trusting and feeling supported by the adults present during the birth. Children in Anderson's (1983) study do not identify adults as supporting them in any way. However, not all children in this study had a support person present during the birth, which may be a contributing factor in these children's recollections.

2.2.4. What children's drawings tell us about their experience of sibling attended birth

Asking children to draw pictures about their SAB experience was used as a method of data collection in several studies (Anderson, 1981; Daniels, 1983; Fragner, 1979; Hammond, 1986; Issokson, 1990). However, in most of the studies the drawings served mainly to help children feel more relaxed during the interview process. Jouhki et al (2015a) published some of the children's drawings but did not analyse the pictures in any depth. Anderson (1981) and Okubo et al (2008) utilised children's drawings as the central data collection method.

Okubo et al (2008) analysed drawings from 24 children aged 2-14 years old who planned to attend their sibling's births. Children were given notebooks and asked to draw whatever and whenever they liked in the last few weeks of pregnancy, during or soon after birth and up until one month after the birth. Art therapists investigated whether children's drawing styles developed, stayed the same or regressed throughout the experience. They found that most children's drawings developed, only four children regressed, of whom only one child was present during birth. No dramatic shifts indicating shock or trauma were observed. Children who attended the birth drew pictures that were rich in detail, included birth specific elements and often focused around the whole family being together. The new baby was commonly pictured as being held by the mother, whereas those children who were not present at the birth tended to draw the baby wrapped in blankets and alone on the page.

Differences in drawings of children who did and did not attend their sibling's births were also observed by Anderson (1981) who compared drawings from 58 children (ages not stated), 31 of whom experienced SAB. Those children who attended the birth used more colours and included more details in their pictures and mostly drew the whole family together during birth. Children who did not attend the birth drew the mother alone during the birth, or in the presence of a doctor or midwife. Only one child added the father to the birth scene.

2.3. How do midwives experience sibling attended birth?

There is a distinct gap in research on the midwives' experience of SAB. Daniels (1983) included midwives' accounts of the child's experience of SAB, but did not ask the midwives about their own opinions or experiences. Daniels found that midwives have a unique insight into a child's experience of birth, as children tended to address their questions to the midwives. Furthermore, midwives often were the only ones to notice when a child became distressed and had good awareness of the importance of sibling bonding.

Midwives' experiences or their role during birth were not addressed in any other piece of research.

2.4. What factors influence the sibling attended birth experience?

How families experience SAB is subject to a variety of individual circumstances. This section discusses five major influencing factors that have been addressed in the body of research.

2.4.1. Preparation

Parents as well as health professionals perceive preparation to be an indispensable part of SAB, yet only a few studies reported on the effect of preparation on the child's experience, with contradictory conclusions. Daniels (1983), Fragner (1979) and Issokson (1990) viewed the preparation as effective and helpful. Children expressed feeling frightened by an occurrence, then remembered the preparation they received and subsequently did not feel frightened anymore. Preparation was particularly helpful for the children in making sense of their mother's behaviour and vocalisations. They knew their mother was in pain, but they knew the pain was necessary and the mother was reacting in a way that helped her

give birth to the baby. On a similar note, Bernhard (1981) found children tended to only express fear or worry in relation to aspects of the birth they were not adequately prepared for, rather than the labour and birth itself. Children in this study were only worried by the pain experienced by the mother, if the pain was part of a procedure.

Jouhki et al (2015a) did not describe preparation as inherently protective. They found that while children trusted the information their parents gave them, they still expressed feeling worried about some aspects of the birth. For example, one child worried about the baby drowning during the water birth, even though her parents had reassured her, that there was no risk to the baby. Children described feeling confused and did not seem to use all the information they were given effectively during the excitement of the labour and birth.

2.4.2. Presence of a support person

A small number of studies reported on the support people's influence on the parents' experience of birth, but no study directly reported on the influence support people had on the children's experience. Parents highly valued the support provided and identified the presence of a support person as having a profoundly positive impact on their experience (DelGiudice, 1984; Krutsky, 1985). In order to hand over their parenting role, parents expected the support person to provide the child with explanations, meet their physical and emotional needs, entertain and occupy the child and to remove the child from the room if deemed necessary (Shea & Webster, 1990).

When asked whether the support person met the parents' expectations, 85 percent of parents (n=63) answered 'yes'. Those parents that answered 'no' explained, that the support person was overly attentive to the mother as opposed to the child and that support people were not prepared enough and therefore not comfortable with the sights and sounds of birth.

Daniels (1983) agreed with these points, she observed that some support people who had never seen a birth before, became distracted and identified with the mother more so than the child. A specific problem she observed was the conflict that arose when a support person was not willing to leave the birthing room with the child. This occurred

occasionally when the support people themselves felt invested in the birth and had a strong allegiance to the mother, which was particularly true for grandmothers acting as support people.

2.4.3. Birth setting and health professionals

The influence of the birth setting on the SAB experience has received some research attention, however none of the studies that included a range of birth settings analysed the findings for potential differences relating to the place of birth.

Families who chose to have a SAB at home commented on the familiar environment being a positive influencing factor on their experience (Fragner, 1979; Jouhki et al, 2015a; Shea & Webster, 1990).

Families who chose to have a SAB at a hospital or birthing unit had some expectations of what they hoped the birth setting could offer. This included physical aspects such as spacious, comfortable rooms, a place for the children to stay outside of the birthing room, toilets near-by, access to food such as a cafeteria or vending machine and access to a television set. In addition, parents hoped they would encounter family friendly hospital policies and friendly staff members with a supportive attitude (DelGiudice, 1984). Some families in Shea and Webster's (1990) study hoped to be able to spend the first night together as a family. Some of those factors, in particular a supportive attitude from staff, spacious rooms and the availability of a separate room allowing children to come and go, were identified as positively influencing the SAB experience (DelGiudice, 1984; Shea & Webster, 1990).

2.4.4. Congruence with family lifestyle

Consistency between a family's usual lifestyle and the nature of SAB was presented by Daniels (1983) as having a major influence on a child's birth experience. Details about the family's lifestyle were gathered through interviews with the parents, considering the way in which children were prepared for birth as well as habits around dressing and bathing. In 22 of the 35 children included in the study, Daniels found a lack of congruence with family lifestyle and suggested this to be the best explanation for the difficulties some of the children experienced. Unfortunately, the process of data analysis is not described in

detail and overall the study lacks transparency, making it difficult to separate findings from the researcher's personal opinions. Other studies did not identify that congruence with family lifestyle impacted on the SAB experience, at least not from the parent's perspective (Fragner, 1979; Krutsky, 1985).

Out of 32 parents in Krutsky's (1985) study, 81% felt comfortable with family interactions around nudity, sexuality and touching and even the 19% of parents who felt somewhat uncomfortable experienced SAB as positive. One mother reported that the children never saw her naked before the birth, but she did not feel discomfort or embarrassment at the birth. Other mothers felt concern about the level of nudity during birth, but found this not to be an issue at the birth. Similarly, one of the five families in Fragner's (1979) study described themselves as modest, but felt nudity caused no discomfort during the birth.

2.4.5. Age and sex of the children present

Even though many researchers are aware of the potential impact that the developmental stage of the child may have on the SAB experience, only a few of studies report on differences in children's behaviours and emotions relating to the children's age.

Mehl et al (1977) observed a small sample of 20 children during sibling attended homebirths. She divided the children into three groups: ages three to six (11 children), ages six to ten (six children) and older (three children). The youngest children were observed to be the most passive, continuing with their usual behaviour and spending the least amount of time in the labour room. Concerns were voiced by the children, but they were easily comforted by support people present. After the birth children needed reassurance from their mothers, before turning their attention to the baby. The children aged six to ten were more actively involved in the birth, spending more time in the labour room, being more verbal and asking more directed questions. Children in this age group appeared concerned about blood and needed more sustained contact and reassurance from the mother after the birth. The oldest children tended to model the behaviour of other adults present during the birth, but still asked questions and needed the presence of a support person, as well as reassurance from the mother after birth.

Younger children were also more likely to remain in a passive role during labour and birth in Anderson's (1981) study. Okubo et al (2008) found that children aged two or three years seemed to have difficulties comprehending the condition of the mother during labour and were most likely to remain outside of the birthing room during the birth. Fatigue, fear and not being able to depend on the mother were reported as the main reasons for leaving the birthing room. In this study boys were more likely than girls to express fear. Eight out of 20 children left the birthing room during labour, of which six were boys, and five were aged two-three years old.

In contrast, Anderson (1983) found that girls were more likely than boys to describe elements of the birth experience as scary. The diversity of the children's cultural background as well as the long gap between the studies could account for the difference in observation. Differences between girls' and boys' interpretations of the experience were also observed by Issokson (1990) who found boys and girls related differently to the pain the mother experienced in labour. Boys tended to describe the pain in a passive manner, commenting that they felt proud and impressed by their mothers' efforts, whereas girls identified more strongly with the mother's experience of pain. Girls empathised more with their mothers and wished to be able to alleviate their pain.

2.5.How do families experience sibling attended birth when there are complications?

The possibility of complications arising during labour and birth was of concern to some women when deciding to have a SAB (Fragner, 1979). One mother felt that the occurrence of complications could ruin the intended effect of providing her child with a positive experience of birth. In the same study a different mother expressed that she would want her child to be present, even in the event of a negative outcome. She herself had not been given any information when her mother had had a stillbirth and felt that approach was more harmful than being included in the experience would have been.

Shea and Webster (1990) found that some form of complication occurred in 23 percent of all 63 planned SABs (preterm labour, induction, caesarean section, etc.), however 14 percent of planned SABs did not take place. The actual percentage of complications

during SAB is not stated. Of the 22 families who planned a SAB in Isberg and Greenberg's (1987) study, only two complications arose, an elective and an emergency caesarean section. No other studies documented the number of complications, but five other studies mention the occurrence of complications in the findings (Daniels, 1983; Frager, 1979; Hammond, 1986; Issokson, 1990; Shea & Webster, 1983)

One baby was born with a low Apgar score after a difficult birth of the shoulders, the attending six year old girl described feeling 'scared when the baby was stuck' (Hammond, 1986). Another occurrence of difficulties with the birth of the shoulders was described by parents in Shea and Webster's study (1983), who said their younger children had no response to the experience but the oldest child was worried and frightened. A postpartum haemorrhage with bimanual compression was witnessed by a boy (age not stated), who felt nauseated and left the room, he described the scene as 'awful, all bloody'. A five year old girl felt frightened during her mother's difficult and prolonged second stage of labour. Reenacting the birth through play with her younger sister, as well as discussions with her parents, helped her to make sense of the experience (Daniels, 1983).

Fragner (1979) and Issokson (1990) found that complications were not necessarily regarded as scary by children. Eleven and nine year old sisters experienced a rushed transfer from birthing unit to hospital (both in the same building) due to meconium stained liquor as exciting and fun (Fragner, 1979). A tight nuchal cord, resulting in a stunned baby at birth was regarded as interesting by a six year old boy, because it was different to the other births he had witnessed as a sibling (Issokson, 1990).

2.6.What factors prevent a child from being present at a planned sibling attended birth?

Not all families who planned on having a SAB ended up including children during the labour or birth due to a change in circumstances during pregnancy or at the onset of labour (see table 8). The number of children who did attend a planned SAB ranged from 59 to 98 percent, with a mean of 81 percent (Daniels, 1983; DelGiudice, 1984; Isberg & Greenberg, 1987; McGeachy, 1983; Okubo et al, 2008; Shea & Webster, 1990). Certainly, the timing of the recruitment into the studies would have had an impact on the number of

unsuccessful planned SABs, as recruiting families earlier on in pregnancy would increase the possibility of a change in the birth plan, such as a planned caesarean section.

Table 8: Percentage of planned sibling attended births taking place

	Children planning to attend (n=)	Children who did attend (n=)	Percentage of attendance
Daniels (1983)	Not stated	Not stated	80%
DelGiudice (1986)	35	31	89%
Isberg & Greenberg (1987)	27	16	59%
McGeachy (1983)	21	18	86%
Okubo et al (2008)	24	20	83%
Shea & Webster (1990)	95	82	86%
Mean Percentage			**81%**

Most commonly reported reasons for a change in plans were complications or caesarean sections, the child being asleep, ill, or at school, the child not arriving at the place of birth in time and the mother or child changing their mind (Daniels, 1983; DelGiudice, 1983; Isberg & Greenberg, 1987; Leonard et al, 1979; McGeachy, 1983, Okubo et al, 2008; Shea & Webster, 1990).

Most parents reported not feeling disappointed at the change in plans (Daniels, 1983; Isberg & Greenberg, 1987; Lumley, 1983). Only a few parents wished their child's level of participation had been different (Daniels, 1983). Isberg and Greenberg (1987) reported that some parents who initially planned a SAB but later changed their plans, were relieved that the children did not attend. Daniels (1983) observed that one girl seemed very upset that she could not attend the planned caesarean section, due to breech presentation. Isberg and Greenberg (1987) on the other hand found that no child complained about missing the birth.

Overall, both parents and children experienced SAB positively, even though children did experience some negative emotions. The studies' findings suggest, that many factors can influence a family's experience of SAB, but the nature and extent of the influence remains in many parts unclear. In the next section, the influence of the SAB experience on parents and children following the birth is explored.

3. Life after sibling attended birth

A large proportion of research involves aspects of the SAB experience that come into play in the weeks and months after the birth. In the following section, six areas of interest relating to the children's knowledge and attitudes on birth, the impact of SAB on interfamilial relationships and the resolution of the experience are explored.

3.1.What do children learn about birth?

A common motivation for including children at birth was the parents' wish for the child to learn about pregnancy and birth through first-hand experience. Assessing whether children did learn about procreation through SAB was the sole objective of one thesis included in this review. Hubner's (1980) study included ten children between three and five years old, who had been present at their sibling's birth in the last four to fifteen months. Data was collected via two validated tools: the origin of babies (Bernstein, 1978 cited in Hubner, 1980) and the origin of night (Laurendeau & Pinard, 1962 cited in Hubner, 1980). Both tools consist of a number of set questions and prompts to gauge children's knowledge of procreation (origin of babies) and physical causality (origin of night). Children's responses were analysed quantitatively as well as qualitatively. Quantitative results showed that children scored higher (p-value < 0.05), on the origin of night tool than the knowledge of procreation tool, indicating that their knowledge of physical causality was higher than that of social causality. There were no significant differences in scores compared to another group of children studied eight years prior, who had not experienced SAB. None of the children could accurately describe conception, however eight out of ten children could point out the body part from where babies are born, compared to the six out of twenty children in the older study.

Qualitative analysis of the responses showed that children often described labour and birth in rich detail, remembering many sights and sounds (mother's breathing, vernix on the baby, etc.) and describing physiological processes correctly. The discrepancy between the quantitative and qualitative findings suggests that the origin of babies tool may not be useful in assessing what children learn through SAB, possibly due to including knowledge of conception.

A high level of recollection in children who were present during birth, as evident through specific and detailed description of the birth sequence and depiction in drawings has also been reported by Anderson (1981), Daniels, (1983), Fragner (1979), Issokson (1990) Jouhki et al (2015a) and Okubo et al (2008). Isberg and Greenberg (1978) agreed that children over the age of eight talked about birth processes in a meaningful way, whereas younger children seemed to have considerable misperceptions of what they observed during birth and as a group could not coherently describe the birth process.

On a similar note Issokson (1990) reported that a few children mixed up facts about the birth. Three out of the 12 children aged five to seven years old for example felt disappointed about being sent out of the birthing room before the birth, even though they spent the entire time inside the birthing room. Issokson contemplated whether children were overwhelmed with the experience and filled cognitive gaps with fantasy as a way of coping. Further Issokson suggested inaccuracies could be a sign of repression, which may be a healthy response towards to an event, which is not in keeping with the child's usual life experiences.

3.2.Does sibling attended birth influence children's attitudes about birth?

Statements made by some of the children throughout a few studies show that being present at a birth could influence how children think about birth experiences they may have themselves in the future.

On the one hand, some girls perceived that having attended a birth provided them with valuable experiences and with the confidence to give birth themselves one day. They reported feeling proud to be female (Anderson, 1983; Hammond, 1983; Mehl et al, 1977; Okubo et al, 2008). One girl in Fragner's (1979) study planned to have many children and to have them all be present at their siblings' births. On the other hand, some girls felt taken aback by the experience. They talked about the pain and hard work involved and were not sure if they would want to have a baby in the future (Fragner, 1979; Isberg and Greenberg, 1978). One boy admitted feeling relieved about being male, because he realised how much of an effort it takes to give birth and look after a baby (Okubo et al, 2008).

Jouhki et al (2015a) and Fragner (1979) found that the place of birth also impacted on some girls' attitudes about their own future births. Some of the girls who had experienced homebirths spoke about wanting to birth at home as well, because it would allow them to have control over the birth environment and the people present at the birth (Jouhki et al, 2015a). One girl who experienced a birthing unit birth planned to avoid birthing at a hospital, because she feared she would not get to bond with the baby in a hospital environment (Fragner, 1979).

3.3 What advice would children who experienced sibling attended birth give to other children?

A number of researchers asked children who experienced SAB what they would tell other children, who are about to be present at a birth. As a group, children gave comprehensive advice on how to prepare for the event, on feelings children may have and on how to behave during the birth.

Children stressed the need to prepare for the birth and suggested to read books, watch movies, take a tour of the hospital and get extra sleep (Anderson, 1983; Hammond, 1986). Other children should also talk to their parents about birth, but not to their friends, as they may give false information (Anderson, 1983). Certain aspects of birth needing particular attention were pointed out: mechanism of birth, what all the words mean, what things look like, there will be blood, mother may be in pain, mother will make noises, mother will be ok and it does not hurt to cut the cord (Anderson, 1983; Fragner, 1979; Hammond, 1986).

Children advised about positive emotions other children may have during the birth. The experience was described as exciting, fun and informative (Anderson, 1983; Daniels, 1983; Fragner, 1979; Hammond, 1986). Negative emotions were also shared, but the advice on how to express those emotions differed. Some children suggested that it is normal to be scared, upset, or even cry (Fragner, 1979; Hammond, 1986), while others suggested children should try to be brave, not to feel scared or jealous, or cry (Anderson, 1983; Daniels, 1983; Fragner, 1979). One girl pointed out, that it is particularly important for the oldest sibling not to cry, as doing so would cause the younger children to be scared

and to cry as well (Fragner, 1979). Children also emphasized the waiting and boredom inherent in the birth experience and suggested that other children bring toys and changes of clothes (Fragner, 1979; Hammond, 1986).

Advice given by children on how other children should behave during birth, showed that children were aware of the need to not interfere in the birth process. They suggested that other children should be calm, quiet and listen to their parents. They also should not touch things, get in the way, or approach the mother (Anderson, 1983; Daniels, 1983; Fragner, 1979; Hamond, 1986; Issokson, 1990). Less advice was given on how children should participate in the birth process, though some children encouraged other children to support the mother, be alert and caring and ask about the sex of the baby. Some children pointed out that other children should remain in the birthing room, as their parents would want them to be present (Daniels, 1983; Fragner, 1979, Hammond, 1986). Advice was also given on the presence of other adults during the birth. Children suggested other children should have a support person there, and a 'fun midwife, who likes kids'. Furthermore, they pointed out, that doctors and midwives know what they are doing, even if it does not appear to be so (Fragner, 1979), and that it is important not to 'bug' the midwife (Anderson, 1983).

Daniels (1983) asked children aged 2-15 years old what age they thought is too young for a child to be present at a birth. The majority of children, regardless of their age, answered that children any younger than themselves would be too frightened by the experience and should not attend. Daniels (1983) interprets this protective attitude as an indication of how close children were to feeling overwhelmed themselves during the experience.

3.4.Does sibling attended birth impact on children's behaviour after the birth?

Some parents hope that SAB will positively impact their children's behaviour after the birth, in particular in relation to sibling rivalry. Indeed, many parents described the relationship between the older child and the baby as close and loving (Daniels, 1983; Fragner, 1979). DelGiudice (1986) reported that 80 percent of those parents who described their children's behaviour as mothering, protective or caretaking (n=7) had experienced

SAB. A close and loving relationship between baby and sibling was described by 100 percent of parents whose children experienced SAB, compared to 62 percent of parents whose children did not experience SAB in Anderson and Brown's (1979) study. Statistical analysis was performed by neither Anderson and Brown, nor DelGiudice.

Children themselves also remarked on the deep bond they felt with their siblings, and connected the way they felt about the baby to their presence at the birth (Daniels, 1983; Jouhki et al, 2015a). Anderson (1983) asked children if they ever felt jealous of the baby. The majority answered 'no', only two of the 14 children admitted to feeling left out or deprived of attention at times. Fragner (1979) found that some younger children displayed jealous behaviour, which some children expressed passively and other children outwardly through aggressive behaviour aimed at the mother. Fragner concluded that the sibling relationship is influenced by many factors such as the baby's personality and therefore the effect of SAB on sibling rivalry should not be overstated.

A quantitative approach to studying the impact of SAB on children's behaviour postpartum was employed in seven studies (Anderson & Brown, 1979; Bernhard, 1981; Clancy, 1985; DelGiudice, 1986; Hoyer, 1984; Lumley, 1983; McGeachy, 1983).

Anderson and Brown (1979), Clancy (1985) and McGeachy (1983) compared parents' responses to questions about their children's behaviour after the birth in two groups: children who did and did not attend a sibling's birth. Clancy (1985) and McGeachy (1983) reported more aggressive behaviour in children who did not attend the birth (p-value<0.05 in both studies). Clancy also reported higher regressive behaviour in children who did not attend (p-value < 0.05); this finding did not reach statistical significance in McGeachy's (1983) study. Anderson and Brown (1979) did not utilise statistical calculations, but results point towards a clear difference between the two groups.
Aggressive behaviour occurred in 16 percent of children who attended the birth (n=43) and in 33 percent of children who did not attend (n=39). Regressive behaviour occurred in 19 percent of children who attended the birth and in 33 percent of children who did not attend.

Bernhard (1981), DelGiudice (1986) and Lumley (1983) also compared parent's responses to questions about their children's behaviour after the birth but reported divergent results. DelGiudice (1986) found no statistically significant difference in the behaviour of the two groups of children aged 2-16 years old. Bernhard (1981) found that children aged 1-12 years old, who went on to attend a sibling's birth showed more positive behaviour in the pregnancy (p-value=0.003). Two weeks after the birth there was no difference between the two groups, but two months after the birth children who attended the birth were more likely to engage in role-reversal (p-value=0.046) and attention-seeking behaviour (p-value=0.05), which the author rated as negative behaviour. Bernhard concludes that SAB has no proven positive effects on children's behaviour and maintains a neutral position on including children during birth.

Lumley (1983) also reported a negative correlation between SAB and children's behaviour two months after the birth. She found that children aged 1-4 years old who attended a sibling's birth had higher aggression scores than those who did not attend the birth. This finding reached statistical significance only when all aggressive behaviour scores were grouped together (p-value=0.005). Children who attended the birth also were more likely to want to bottle or breastfeed again (no p-value supplied), which was classified as a regressive behaviour. This behaviour occurred more often in children who attended the birth in Anderson and Brown's (1979) study as well, though statistical analysis was not performed. In addition, Lumley (1983) reported that those children who did not attend the birth and saw their mother and the new baby more than 12 hours after the birth displayed less affectionate behaviour compared to children who experienced SAB or saw their mother and new sibling earlier (p-value=0.0001).

Hoyer (1984) used a slightly different approach. She did not compare the behaviour of children who did and did not attend the birth, instead the researcher recruited a sample of families who planned a SAB. The children (aged 2-4 years old) came with their parents to the hospital when labour commenced. There was a period of separation when the mother was admitted to the labour ward. Upon reunion behaviours indicating secure or insecure attachment between mother and child were observed using a checklist based on Ainsworth's strange situation tool (Ainsworth & Wittig, 1969 cited in Hoyer, 1984). After the birth the children were divided into three groups based on their level of participation

during the birth: children who were present in the birthing room, children who were in another room and children who went home. The children's behaviour postpartum was then rated according to parental responses and observations during a home visit. Hoyer (1984) found that securely attached children consistently displayed more participative behaviour and less aggressive and regressive behaviour than insecurely attached children (p-value<0.001 for all three behaviour scales). Hoyer also reported that children who were present in another room during the birth had lower aggression scores than children who either went home or were in the birthing room during the birth (p-value not provided). It is important to note, that of the 26 children present in another room during birth, 17 belonged to the securely attached children group, which may have impacted on the results. Hoyer concludes that at best SAB has no positive effect, and at worst has a limited negative effect on children's behaviour postpartum.

In addition to the difference in children's behaviour based on the level of birth participation, other factors, namely age, sex and the level of preparation were also identified as impacting on children's behaviour in some of the above-mentioned studies. Younger children were more likely to display regressive behaviour (Hoyer, 1984 [p-value<0.05]; Lumley, 1983 [p-value not supplied]; McGeachy, 1983 [p-value not supplied]) and aggressive behaviour (Clancy, 1985 [p-value<0.05]) and less likely to display participative behaviour (Clancy, 1985 [p-value<0.05]; Hoyer, 1984 [p-value<0.001]; Lumley, 1983 [p-value not supplied]). Girls were more likely than boys to display regressive behaviour (Hoyer, 1984 [p-value<0.001]).
Bernhard (1981) reported contrasting findings. In her study, older children were more likely to display negative behaviours such as shyness, withdrawal, role reversal and attention-seeking behaviours (p-values<0.05). Bernhard interpreted that parents were likely to have higher expectations of older children and therefore may have been more likely to report negative behaviours, whereas parents of younger children may have regarded negative behaviours as age-appropriate and therefore not noteworthy.

The correlation between the level of birth preparation and the children's behaviour was analysed by Bernhard (1981) and McGeachy (1983). McGeachy (1983) found that preparation alone had no significant effect on the child's behaviour postpartum. Bernhard (1981) on the other hand found that the earlier and the more extensively children were

prepared for the birth, the more negative behaviours they displayed, both before and in the two months after the birth (p-values <0.05).

This correlation was stronger in the children who did not experience SAB. Those children who did experience a planned SAB and were extensively prepared had fewer positive peer relations (p-value=0.026), more shy behaviour (p-value=0.049), but also less aggressive behaviour after the birth (p-value=0.046). The earlier these children were prepared, the more 'acting out' behaviour was observed (p-value=0.02). Bernhard's study has a robust design, with children's behaviour being assessed at four points in time via a parental questionnaire, a checklist of adjectives describing the children's mood and behaviour filled in by the children themselves and observation of the child's behaviour during a home visit. Still it is prudent to consider, that a correlation does not signify a causal relationship, as children's behaviour is influenced by a large variety of factors.

3.5. What impact does sibling attended birth have on other interfamilial relationships?

In addition to the sibling-baby relationship, two studies questioned parents about changes to interfamilial relationships after the SAB experience. Lumley (1983) found that 71 percent of a group of 80 parents felt other relationships remained unchanged, 12 percent felt they had improved, seven percent felt the relationship between the older child and the father improved, and eight percent felt relationships in the family had deteriorated. Anderson and Brown (1979) posed the same question, however the sample in this study consisted of families who did experience SAB (n=25), and families who did not (n=25). Families who experienced SAB birth were more likely to report improved relationships, both within the family in general (36 vs 32 percent), and between the father and the child (24 vs 12 percent). More families who did not have the children involved in birth reported a deterioration in interfamilial relationships (40 vs 16 percent) due to difficult behaviour displayed by the child. Anderson and Brown did not employ statistical calculations, which makes it difficult to assess the significance of this finding.

3.6.What activities do families engage in to consolidate the experience?

Families' approaches taken to consolidate the SAB experience have received little attention in the literature. While some authors noted birth-related play amongst children who were present at birth and remarked upon its potential for resolution and consolidation (Daniels, 1983, Fragner, 1979; Mehl et al, 1977), only one study aimed to gather more indepth information on the subject area (Shea & Webster, 1990). In this study of 63 parents, 86 percent viewed the resolution of the experience as important, as it helped parents to assess the child's understanding of the experience, allowed for questions to be answered and served to dispel any fears children may have after witnessing birth.

In the weeks following the birth, 73 percent of parents took specific actions to help children consolidate the experience. This was most commonly achieved by talking about the experience (63 percent). Some families also used photos or videos (14 percent), or children's drawings (10 percent) to facilitate consolidation. Nineteen percent of families indicated, that the care provider participated in the resolution and consolidation of the experience, mainly by involving children in discussions about the birth at the final check-up.

In summary, findings show that children learn about childbirth through SAB and suggest that some children's views and plans for their own future births are impacted by their experience of witnessing birth. Research on the impact of SAB on sibling relationships and sibling rivalry has not led to conclusive findings. In the next chapter, a number of findings are discussed in more detail and located within the body of relevant literature.

Chapter five
DISCUSSION

Overall the body of research portrays sibling attended birth (SAB) in a positive light. Those authors that view SAB more negatively base this conclusion on the presence of negative emotions during birth as well as negative behaviour displayed after the birth. In addition to a summary of the findings, this chapter aims to discuss some areas of SAB in more detail, that have the potential to influence the quality of the experience for families: preparation, birth setting, children's ages, degree of participation and the sibling-baby relationship. Furthermore, the strengths and limitations of the dissertation are discussed and recommendations for midwifery practice and future research are made. A concluding statement completes this chapter.

1. Planning and preparing for sibling attended birth

Families who chose SAB did so mainly to strengthen family unity, teach children about birth and improve the sibling-baby relationship. Children viewed the birth of their sibling as an important life event and emphasised their desire to be present. Multiple factors, such as the child's wishes, age and personality and the woman's prior birth experiences were considered during the decision-making process. Families who did not choose SAB, feared their children were too young, would be overwhelmed or would generate too much distraction. There were no significant demographic differences between families who did and did not choose SAB. A more modern approach to parenting, more open expression of nudity and sexuality and more extensive preparation for birth were noted amongst families who chose SAB.

When planning for the birth, most families chose a support person, to entertain the child, provide reassurance and meet physical and emotional needs during birth. Not all the support people were able to be present during the birth. The effect of having a support person on the child's experience was not addressed in the research. For the parents, support people clearly enhanced their experience of birth. Fathers reported being able to hand over their parenting role, which in turn enabled them to focus on supporting the

mother. A few parents felt that support people were insufficiently prepared or became overly attentive to the mother and not the child, which caused difficulties.

1.1. Discussion point: Preparation

Effects of preparation on children's SAB experiences have been observed in some studies. Jouhki et al (2015a) reported that having knowledge of certain aspects of birth did not prevent children from feeling worried in some instances. Children at times also seemed unable to use the information they received effectively in the excitement of the birth. Other studies noted that preparation gave children reassurance and helped children to make sense of their mother's behaviour.

In the body of the research, the focus of the children's preparation was on their understanding of the birth process and the accompanying sights and sounds using books, films, photographs, audio tapes and birthing dolls. Parents also discussed emotional aspects of birth with their children and imitated the mother's breathing and vocalisations. Some families took specific sibling birth preparation classes, took tours of the hospital or birthing unit and included their children in antenatal care. After the birth, most parents felt that preparation was effective. Those that did not, wished they had prepared children better for the blood, the mother's vocalisations and the unavailability of the mother; which corresponds with the finding that blood, pain, and the mother's vocalisations were the most commonly cited causes of fear in children experiencing birth. Some parents also voiced that they wished they had prepared children better for the possibility of complication or changes in the birth plan.

Children, who were asked what they would tell other children about to witness a birth, also point out the importance of preparation using books, videos and discussions with parents. The need to understand the mechanism of birth, the language used, and the fact that there will be blood, pain and vocalisations involved were highlighted. Children would also share information on possible positive and negative emotions and appropriate behaviour.

The above-mentioned findings suggest, that effective preparation aims to increase children's understanding of the birth process, with particular attention paid to the presence of blood, the mother's pain and her vocalisations.

Other findings point towards the need for a flexible approach to preparation: often plans changed during pregnancy and birth. A planned SAB, did not always result in the presence of children during labour due to complications, children being asleep, ill, or not arriving at the hospital in time. Some mothers or children also changed their minds about the planned attendance. Likewise, not all children present during labour were present during birth. Leaving the birthing room was some children's way of modulating the intensity of the experience, other children were taken out of the room by other adults, because they behaved in an unruly manner.

Anderson (1983) observed that children ascribed great importance to witnessing the moment of birth and identified this moment as the highlight of their experience. Some children spoke about wanting to leave the birthing room at times, but staying put for fear of missing out. When advising other children about what to expect during SAB some children in this study stressed that children should not leave the room, because their parents would want them to attend. Isberg and Greenberg (1987) speculate that children may not want to leave the room because they may be concerned about the mother's wellbeing.

A careful balance between preparing children effectively for the birth and giving room for varying levels of participation may alleviate disappointment and undue pressure on children. Portraying information about birth in general terms during preparation, irrespective of the child's involvement may be one way to achieve this balance. For example, parents could say: 'mums make funny sounds when they have a baby' rather than: 'you will hear mum making funny sounds'.

Discussions around the children's presence can help children to decide if they would like to attend the birth, or not. However, the evidence supports keeping discussions openended, stressing the children's ability to change their minds about their participation and

exploring different scenarios (e.g. birth may happen quickly or at night, children may be asleep or playing outside, plans may change at the last minute ...).

Guidelines and suggestions for the preparation of children were often included in the research findings. However, since these pieces of research may be difficult for parents to access, an internet search was carried out to assess the quality of information available at this point in time. The identified articles were not included in the systematic literature review, as they did not meet the inclusion criteria (only papers that constitute pieces of research).

Fifteen relevant pages were identified, most of which had a focus on homebirth (Babycenter, n.d.; Boone, 2005; Foster, 2014; Hartley, 2014; Hippie Housewife, 2012 Lapp Cryns, n.d.; Littlejohn, 2011; O'Mara, 2015; Pekin, 2015; Peterson, 1993; Pregnancy Info.net, n.d.; Rosemary Birthing Home, n.d.; Rüdiger, 2014; Wayne, 2011; Wright, n.d.). Scientific literature was cited only by Lapp Cryns (n.d.), who referred to a number of journal articles and book chapters, but included no research studies.

All of the articles stressed the importance of having a support person available and of teaching children about birth processes using books, videos, etc. The need for a flexible attitude on the degree of the child's participation and the necessity of children to be able to come and go was also sufficiently discussed. Many authors suggested involving children in antenatal care (Boone, 2005; Foster, 2014; Hippie Housewife, 2012; Lapp Cryns, n.d.; O'Mara, 2015, Pekin, 2015; Rosemary Birthing Home, n.d.; Wright, n.d.).

Additional suggestions that had not been not mentioned in the body of research included comparing the work of birth to other situations that require physical exertion such as sports or lifting heavy items (Lapp Cryns, n.d., Pekin, 2015 & Wright, n.d.), looking at videos and photographs of animals giving birth (Rosemary Birthing Home, n.d.; Rüdiger, 2014) and using artwork during birth preparation (Foster, 2014; O'Mara, 2015; Rüdiger, 2014).

Some authors pointed out that the mother's noises and the presence of blood needed particular attention (Babycenter, n.d.; Foster, 2014; Hippie Housewife, 2012; Pekin, 2015;

Pregnancy Info.net, n.d.; Rüdiger, 2014; Wright, n.d.) in the other articles this information was missing. O'Mara (2015) and Wright (n.d.) stressed the need to communicate the mother's unavailability to the children. The need for age appropriate information is mentioned by some authors (Foster, 2014; Lapp Cryns, n.d.; Littlejohn, 2011; Pekin, 2015; Rosemary Birthing Home, n.d.), but practical examples of how this can be achieved are lacking.

Age appropriate information has also been of concern to Fragner (1979), who feared that too much, or not age-appropriate information could make the birth experience more frightening and incomprehensible to the child. Bernhard (1981) shares this concern, as findings in her study linked intensive preparation with negative behaviour after the birth. What constitutes 'age-appropriate' information has not been addressed in the body of research.

Several theories on children's cognitive development exist. Piaget's theory (Piaget, 1952) described four stages of cognitive development based on chronological age. In the sensorimotor stage (0-2 years) children gain knowledge by coordinating sensory experiences with the physical interaction of objects. Preparation for birth in the pre-verbal child is likely to be limited. Children who have developed the necessary motor skills might benefit from playing with a birthing doll, parents could add birth related noises such as the mother's breathing, or the baby crying.

Children in the pre-operational stage (ages 2-7 years) do not yet understand concrete logic and are limited by egocentrism. While they can form stable concepts, they may have difficulty mentally manipulating information. Children often utilise role-play to make sense of their world. Exploring the roles of the various people involved at birth through role play could be a way to introduce different aspects of birth, for example pain. Visual aids such as books or videos could help children understand concepts in a more concrete way.

In the concrete operational stage (7-11 years) children can think in a more logical fashion, but still require concrete information to make inferences. They lose their ego-centric view of the world and can take other people's point of view. Inductive reasoning is usually

present, but deductive reasoning is not. For example, children are likely to believe that all pain and all blood is a sign of injury and may benefit from explanations around the function of blood and pain during labour.

The last stage of cognitive development according to Piaget is the formal operational stage (ages 11- adulthood), in which children learn to use inductive and hypothetical thought. When learning about birth, children may have thoughts about potentially frightening situations: e.g. what if something goes wrong? What if the midwife does not arrive in time? Voicing such concerns, and receiving honest but age-appropriate answers during preparation could help children in this age-range. Some older children might benefit from a more in-depth explanation of birth physiology and possibly the potential for complications. Younger children incapable of hypothetical thinking most likely would not benefit from learning about complications.

Over the years, Piaget's theory has received criticism based on its negligence of the impact of social interactions and cultural as well as individual differences (Matusov & Hayes, 2000). Critics also express that cognitive development is not always linear and that the processes of how and why children move through developmental stages is not addressed (Lutz & Huit, 2004). An in-depth analysis of modern cognitive development theories may add to our understanding of children's preparatory needs, but is beyond the scope of this project.

Ultimately each child's socio-cultural circumstances, their personality, learning style and information needs are unique and best known to the child's parents. Until more research increases our understanding of age-appropriate and effective preparation for birth as well as its impact on the child's experience, parents will need to assess their children's preparatory needs individually. Rather than overwhelming children with unnecessarily detailed information, findings suggest that parents should aim to increase their children's familiarity with important aspects of the birth experience, enlist a reliable and sensitive support person and maintain a flexible attitude towards the child's participation.

2. Experiencing sibling attended birth

Nearly all families who experienced SAB reported positive experiences. Mothers and fathers felt their children's presence positively influenced their experience of birth and reported feeling very connected as a family. Mothers felt supported and grounded by their children's presence, though awareness of the children's presence during labour and birth varied. Some mothers moderated their behaviour to increase the child's comfort level and to maintain control of their birth experience. Nearly all parents said they would have another SAB in the future, should there be another birth. The experience of SAB from a midwifery perspective has not been addressed in the body of research.

Most of the research attention has been on the children's experiences of birth. Children's behaviour was described as varying between observation and active participation, which included providing support to the mother. Children tended to come and go and spent part of the labour continuing with their usual behaviour. After the birth children shifted their attention to the baby. Bonding behaviours such as touch and prolonged eye contact were observed in many of the sibling- baby pairs. Soon after the birth children resumed normal activities.

Children reported both positive and negative emotions during labour and birth. Most studies identified joyful anticipation as the leading emotion. Boredom and frustration while waiting for the birth to occur were also commonly reported. Fear, anxiety and disgust were reported as subtle and transient emotions, often tied to specific aspects of the birth. A small number of studies reported more frequent occurrences of negative emotions. Two of these reported no positive emotions at all, which points towards a reporting bias. None of the studies identified signs of trauma or severe distress in children who witnessed birth, even in the small number of children who witnessed birth complications.

2.1. Discussion point: Level of participation

When SAB was first introduced, the lack of research on outcomes led to the suggestion to allow children to be present during labour, but not birth (Klaus & Kennel, 1982). Anderson (1983) felt it would be detrimental to let children witness the pain and hard

work of labour without the joyful conclusion of the birth and DelGiudice (1986) feared children would develop scary, fantastic notions about the things they did not see.

The impact of the child's level of participation on their experience of birth was only addressed by one study. Hoyer (1984) found children who were outside of the birthing room at the moment of birth displayed less aggressive behaviour than children who were either present in the birthing room or had left the hospital to return home. Hoyer wonders whether children who witnessed the birth saw the baby as the reason for the mother's pain. The strongest influencing factor on behaviour in this study however was the children's attachment to the mother. Securely attached children had the lowest aggression scores, and tended to be present outside of the birthing room, which may have confounded the findings.

The level of participation has also been discussed by Fragner (1979), as part of a theoretical model on SAB. Fragner theorises that children who play a more active role during labour and birth may have a more positive experience of birth, as their self-esteem is strengthened and they see themselves as valuable members of the family. Fragner fears that not having a role to play during birth may make the child feel superfluous and excluded.

In the body of research, a number families planned the child's participation by assigning roles and specific tasks. Some parents who made no prior plans, believed that more active participation could have improved the child's experience, but did not explain how or why. Children reported feeling important and proud to be able to participate in the birth, but did not focus on participative activities when asked what other children should know about attending a birth.

Keeping in mind the unpredictable nature of birth in general and SAB in particular, the researcher cautions not to raise unrealistic expectations or put undue pressure on children. Parents may consider limiting preassigned tasks to activities that could also take place before or after the birth, such as picking out baby's first outfit or baking a birthday cake. During labour, the support person could then engage children in other participatory activities depending on the mother's needs and the child's preference.

2.2. Discussion point: Birth setting

Including children at birth has been identified as a motivating factor for choosing homebirth (Hildingsson, Waldenström & Radestad, 2003; Jouhki, 2012; Murray-Davis et al, 2012; Sjöblom, Nordström & Edberg, 2006). For other women, the decision to birth at home comes first, and the decision to include older siblings follows on naturally (Anderson, 1979). In some ways, the home is an ideal setting for a SAB, as children are comforted by the familiar surroundings and can come and go as they please. Participation is facilitated as children have access to the kitchen and know where items are kept (Anderson, 1981; Fragner, 1979). In addition, Fragner (1979) wonders whether a calm and positive birth atmosphere, which she believes to be essential to a good SAB experience may be easier to achieve during homebirth.

In the body of research, both parents and children talked about the familiarity of the homebirth setting enhancing the SAB experience. A high satisfaction with the childbirth experience in home or home-like settings outside of a SAB context has been noted in a number of research studies (Caroline & Fleming, 2011; Christiaens & Bracke, 2009; Hodnett, Downe, Edwards & Walsh, 2005; Hodnett, Downe & Walsh, 2012; Janssen, Carty & Reime, 2006).

Research on mothers' and father's experiences of homebirth illuminates in what way the home environment may contribute to birth satisfaction. In the research, women express that the comfort and familiarity of their home helped them to manage the pain of labour (Bernhard, Zielinski, Ackerson & English, 2014; Murray-Davis et al, 2012). The privacy and intimacy of the home setting also engendered feelings of safety. Women were able to relax, which they believed facilitated labour progress and physiological birth (Boucher, Bennett, McFarlin & Freeze, 2009; Janssen, Henderson & Vedam, 2009; Murray-Davis et al, 2012). In addition, being at home gave women a sense of control over the environment and who would be present to provide support (Ashley & Weaver, 2012; Bernhard et al, 2014; Murray-Davis et al, 2012; Sjöblom et al, 2006)

Fathers also expressed feeling in control during labour and birth, which instilled confidence and made it easier for fathers to actively participate during labour and birth.

The home environment; particularly the lack of interruptions and strangers, helped fathers feel relaxed and secure (Jouhki, Suominen & Åstedt-Kurki, 2015b; Lindgren & Erlandsson,
2011; Sweeney & O'Connell, 2015).

Mothers and fathers who chose to birth in a hospital setting reported feeling safe and protected at the hospital, due to the presence of doctors and medical equipment. Fathers also felt less pressure to provide continuous support to their partners in a hospital setting (Bedwell, Houghton, Richens & Lavender, 2011; Houghton, Bedwell, Forsey, Baker & Lavender, 2008).

This sense of safety may also be perceived by children attending a hospital birth. On the other hand, the unfamiliarity of the hospital environment may also induce fear and restrict children's movements (DelGiudice, 1984; Fragner, 1979). This concern was not confirmed by three studies investigating factors that hinder or facilitate SAB. Findings showed that children did not appear scared or intimidated by the hospital environment, which they had often come to know during previous visits. Most families found the amenities adequately met their families' needs. Only a few felt restricted by a lack of room, unsupportive staff or strict protocols.

The impact of the place of birth on the children's experience of SAB is difficult to assess, due to the small number of studies that focused on SAB and a lack of analysis by those researchers who investigated SAB in a number of birth settings. However, those studies which only included homebirths did portray the SAB experience as very positive, which led Isberg and Greenberg (1987) to contemplate whether their more critical evaluation of SAB was due to the lack of familiarity that exist when birth takes place outside of the home.

In conclusion, SAB may be more easily achieved during homebirth, but need not be restricted to this birth setting. When SAB takes place in an out-of-home setting, familiarity can be increased by introducing children to the hospital setting during pregnancy. Ideally, children should have a support person present and have access to a separate room to ensure they can easily come and go during labour.

2.3. Discussion point: Children's ages

Most studies included a wide range of children's ages, from early childhood to adolescence, but very few studies reported on differences in the children's experience of SAB in regards to different age groups. Those that did, found that younger children tended to spend less time in the birthing room, displayed more passive behaviour, needed to be reassured that the mother was alright after the birth, and were more likely to remain outside of the birthing room during the moment of birth. One study (Okubo et al, 2008) found younger children were more fearful and had difficulty comprehending the mother's unavailability. Six studies included only younger children with a narrower age range, but did not report more negative outcomes compared to the studies which included a wide range of ages.

Age restrictions on children's attendance at birth were reported in some studies undertaken to evaluate SAB programs (Daniels, 1983; Isberg & Greenberg, 1987; Leonard et al, 1979). Daniels (1983) reported that age alone did not impact on the children's experience of birth and noted no signs of trauma in any of the children. Nevertheless, children under the age of five were excluded from attending births as a result of the study. The policy change was explained regarding older children's ability to communicate feelings and talk through possible traumatic events should they occur. Isberg and Greenberg (1987) made the same age recommendation, but based it on the children's limited ability to understand and make sense of the birth process. Leonard et al (1979) reported that children under the age of four are not encouraged to attend births, as they are more dependent on their mothers for support and are less likely to ask questions about things they do not understand.

Though not based on research findings, Fragner's (1979) theoretical model on SAB provides insight into the potential impact of SAB on children aged 12 months to 6 years informed by Erikson's, Freud's and Mahler's theories of child development. Fragner points out that unavailability of the mother during birth may be very challenging for children under 15 months, who still have a symbiotic relationship with their parents. For example, very young children may also be extremely sensitive to the emotional intensity of the experience. Limited cognitive ability and the pre-verbal state of children make it

very difficult to know how children are affected by labour and birth. Therefore adequate emotional support is therefore paramount.

Cognitive and verbal limitations still impact slightly older children (15-36 months). However, at this age, separation from parents can be painful to children and may cause more stress than the attendance at birth. The developing sense of self in children in this age group can be supported by giving the child age-appropriate tasks, taking care not to frustrate or overwhelm the child with unrealistic expectations.

Children aged three to six years may be impacted by the sexual nature of birth, particularly if they are not familiar with adult nudity. In this age group, children begin to have a clear sense of their position with in the family structure. Attending the birth may strengthen children's sense of purpose and involvement in the family. Children's growing cognitive and verbal skills facilitate preparatory activities as well as the resolution and consolidation of the experience after the birth.

In conclusion, the studies completed to date do not provide evidence to support an agelimit for the attendance of children at birth. Communicating the tendency for younger children to remain in an observer role and spend less time in the birthing room could help families to generate realistic expectations of children's involvement. Evidence supports sharing with families the benefits of having an attentive support person present during labour and birth.

3. Life after sibling attended birth

Many parents wanted to include their children during labour and birth to teach children about birth. The consensus in the literature was that children did indeed have very detailed memories of birth as evident in their drawings and their use of birth related terminology as well as physiological processes when discussing their experience. However, misperceptions and inaccuracies were evident in some younger children's accounts of birth.

Witnessing birth also appeared to influence some children's views about birth both positively, through inspiring confidence and positive female gender identification and

negatively, through hesitations around the pain and hard work involved in labour and birth.

Out of hospital birth experiences also appeared to influence some girls' future birth plans. Little research attention was directed at the resolution process that occurs after SAB. Not all families made a conscious effort to talk to their children about their experiences and only few care providers were part of the resolution process. Romero (1984) and O'Mara (2015) suggest encouraging all families to actively seek resolution, even after an uneventful birth, to increase children's understanding of birth and address fears or unanswered questions. Role playing using dolls, artistic expression and recall processing, which involves first re-telling the birth experience from each family member's point of view and then talking about the emotions that were experienced, may facilitate the resolution process.

3.1.Discussion point: Sibling rivalry

A major focus of the body of research was the impact of SAB on the incidence and severity of sibling rivalry. This interest was fuelled by parent's observations of reduced sibling rivalry after SAB (Anderson & Brown, 1979), as well as other research findings in the field of infant-parent bonding and parent-child separation. In the 1970's and early 80's, studies reported that facilitating more contact between the mother and the older siblings had a positive impact on children's behaviour related to sibling rivalry (Trause & Irvin, 1982) at the same time evidence of specific bonding behaviours and a critical bonding period that occurs in the first few hours after birth emerged (Klaus & Kennel, 1982). A positive impact of early bonding on parent-infant relationship was described and it was observed that other people (not only parents) who took part in this critical bonding period also expressed a deep bond to the child (Klaus & Kennel, 1982). In combination, these findings led to the question of what effect sibling attendance at birth might have on infantsibling bonding and sibling rivalry (Clancy, 1985; McGeachy, 1978).

The studies that investigated sibling rivalry in this review reported divergent findings, three studies reported a positive effect, and three studies noted a negative effect on children's behaviour. One study reported no significant effects. Age and sex were identified as playing an important role in the expression of sibling rivalry. Differences in the level of participation, preparation, mother-child attachment as well as parenting styles

were analysed by two studies (Bernhard, 1981; Hoyer, 1984) and were found to impact on children's behaviour. Data collection in all included studies occurred in the form of a parental questionnaire addressing different aspects of the children's behaviour using Likert type scales, which potentially is subject to bias inherent in the parents' reporting. Hoyer (1984) added observation and Bernhard (1981) added children's reports on behaviours and emotions. The questionnaires used in the different studies did not adhere to a standardised format, making direct comparisons difficult. Lastly, the timeframe between the birth and the data collection differed between studies, which is noteworthy, as sibling rivalry behaviour has been found to increase once the new baby becomes more mobile (Anderson & Brown, 1979; Legg, Sherick & Wadland , 1974).

Dunn, Kendrick and MacNamee (1981), Legg et al (1974) and Trause (1978) researched children's behaviours after the birth of a sibling, outside of a SAB context. Behaviour indicating sibling rivalry was reported to be a very common occurrence, particularly in younger children. The length of separation and amount of visitation between the mother and the older child, differences in child temperament, the mother's psychological state and additional stressors such as a recent move of living quarters were noted as significant influencing factors. More recent studies have focused on sibling jealousy occurring later on in the sibling relationship. Important themes addressed in the body of research are attachment, parenting styles, quality of the relationship between parents, differential parental treatment as well as children's temperaments, emotion socialisation, age, gender and birth order (Burke, 2008; Volling, Kennedy & Jackey, 2010).

The complex nature of the sibling relationship and the high number of potential influencing factors suggest that analysing children's behaviour using quantitative approaches may not be the most reliable method to explore sibling rivalry in the SAB context. In fact, it remains unclear whether children's behaviour can be regarded as an indication of the existence and severity of sibling rivalry. Bernhard (1981) found that families who chose SAB expressed anger and aggression more openly. The study findings went on to show more negative behaviour in SAB children after the birth. Instead of concluding that SAB has a negative impact on sibling rivalry, one could also question whether being able to express negative emotions may help children to adjust to their new role as older sibling and thus positively impact the sibling relationship. By implication, a

lack of negative behaviour may not necessarily mean that a child harbours no negative emotions or has a particularly deep bond with the baby. Qualitative approaches aimed at exploring the meaning parents and children ascribe to sibling bonding in the SAB context and the impact on the sibling relationship may increase our understanding of this aspect of the SAB experience.

Parents continue to cite an improved sibling relationships both as a main motivator for choosing SAB and as a concrete result of their families' birth experiences (Foster, 2013; Kowalczyk, 2012; Lapp-Cryns, n.d.). Parents should be informed, that an association between SAB and lessened sibling rivalry has not been unanimously reported in the body of research. SAB may well have an impact on sibling bonding and the longer-term sibling relationship, but more research in this area is needed. Rather than expecting minimal sibling rivalry after SAB, parents may benefit from learning how to best support children in their new role, by encouraging participative behaviour, allowing children to express negative emotions and keeping in mind, that jealous behaviour is a normal reaction in many children.

4. The midwife's role

Modern midwifery practice is underpinned by a strong belief in the normalcy of childbirth and the uniqueness of each family's birth experience (Carolan & Hodnett, 2007), which places midwives in an ideal position to become a part of SAB.

The New Zealand partnership model of midwifery care provides a frame-work for holistic care tailored to each woman's individual needs based on shared decision making and continuity of care (Guilliland & Pairman, 1994). This model of practice enables midwives to play an important role throughout all stages of the SAB experience. The Competencies for Entry to the Register of Midwives as defined by the New Zealand Midwifery Council (2007) state that midwives provide up to date information and support the woman/wahine with informed decision making (Competency 1.6). Midwives also facilitate, clarify and encourage the involvement of family/whanau as defined by the woman/wahine (Competency 1.10).

In subsequent pregnancies discussions around family involvement may well include the possibility of older children attending the birth. Those families who wish to learn more about SAB are entitled to receive evidence based information to enable an informed decision. Midwives can utilise research findings to guide the child's preparation for birth, when a family decides to plan for a SAB. Midwives can also become involved in the preparation of the child, by including them in antenatal care and talking to children about birth. Knowing the midwife and being familiar with the examinations carried out by her will increase children's comfort and confidence (Kitzinger, 1979). During labour, midwives may involve children by answering questions or including them in simple tasks (Nolan, 1994). The recommendation for a support person for the children needs to be clearly communicated, as the woman and baby are the midwife's primary concern during labour and birth.

Continuity of care enables midwives to involve children in discussions around the birth during postnatal care, thereby supporting children and other family members in the resolution and consolidation processes. Women should also be able to discuss labour and birth and aspects relating to the children's involvement when children are not present.

While knowledge of research findings on certain aspects of the SAB experience will enable midwives to provide women with evidence-based information, other areas of the SAB experience remain unexplored. Utilising other sources of knowledge, such as reflection on professional experiences through journaling and engaging in dialogue with other midwives who have experienced SAB may be an effective way to increase midwives' understanding of SAB.

5. Strengths and limitations

The researcher has identified several strengths and limitations inherent in this dissertation. One clear point of strength, is the dissertation's ability to fill an existing gap of research, since there have been no prior systematic literature reviews on the topic of SAB. Another strong point of the dissertation is the attempt to minimise sources of bias throughout all stages of the research process.

Careful formulation of highly sensitive search terms, an exhaustive literature search including multiple grey literature sources and minimal use of exclusion criteria served to minimise publication, citation and selection bias. The use of a validated quality assessment tool and confirmation of the effectiveness of the quality assessment process by an independent researcher strengthened the quality assessment process. The structured approach to the data extraction and analysis process provided a complete synthesis of all findings that inform our understanding of sibling attended birth. Minor, unexpected and contradictory findings were included, which reduced reporting bias. An awareness of the potential of researcher bias due to preconceived conclusions enhanced the transparency of the research process.

Limitations of the dissertation are inherent in the methodological approach of the dissertation, as well as the age, setting and quality of the included studies. Firstly, the allencompassing nature of the synthesis process limited the depth of the analysis in some areas. Future literature reviews could strive for a more detailed analysis of singular aspects, such as the children's experience of birth or the sibling-baby relationship. Hereby, more attention could be paid to differences in the data collection and analysis of the included studies.

Another limitation of the dissertation is connected to the generalisability of the findings, which is limited by the small number of participants overall, and the inability to report on statistical significance in small quantitative studies. In addition, nearly all studies were set in the United States. Missing information on the participants' ethnicities further restricts generalisability. Cultural differences and divergent maternity care systems pose the question whether findings are valid in a New Zealand context. The age of the studies is another factor in need of consideration. Many studies date back more than thirty years. Since then changes in parenting practices have potentially occurred. The widespread use of information technology has likely influenced children's knowledge and attitudes about birth. A myriad of pictures and videos on pregnancy and birth, online sibling birth preparation classes (Birth Boot Camp, n.d.) and special pregnancy apps designed for children such as '9 month' (Best Apps For Kids, n.d.) may be incorporated into present day SAB preparation.

More importantly, the provision of care during labour and birth has undergone significant changes over the years. Some procedures, such as certain hygiene measures once regarded as routine are now obsolete; other procedures, such as the use of epidural pain relief or caesarean sections have increased (Davis, 2013). It is likely that these changes would influence how children perceive birth. However, the fact that SABs generally occur in the context of natural childbirth, may mean that SABs now are not dramatically different to thirty or more years ago.

Lastly, the age of the included studies posed some difficulties during the quality assessment process. A lack of reporting guidelines at the time when most studies were published, meant that some aspects, in particular ethical considerations and data analysis processes were not documented in the same level of detail as would be expected today. Missing information could have led to unnecessarily low quality assessment scores. Where possible the researcher gave missing information less weight than clear methodological weaknesses during the quality assessment process. Overall the quality of the studies was acceptable, the mean quality assessment score being 29 out of 40. Only three studies scored less than 20 points, two of these studies reported sibling's experiences more negatively than the other studies. However, lower quality studies were not excluded as they each contributed valuable information. Instead methodological weaknesses were pointed out in the results section.

6. Recommendations for future research

The systematic literature review process has led to the identification of gaps in the current body of knowledge and has therefore enabled the researcher to make recommendations for future research to be undertaken in the field. Much of the research on SAB is relatively dated, which shows a need for new, up-to-date research projects, in order to surface a more contemporary understanding of the topic. SAB has not been addressed in the New Zealand context. The unique historical and cultural context of this country, as well as its distinct maternity care system, suggests that a New Zealand specific study would have great merit. The phenomenon of SAB could, in the future, be quantitatively explored by gathering data about prevalence, including aspects relating to birthplace and 'system of care'.

This review also identified, that midwives' voices are nearly non-existent in the current body of research. Midwives play a central role during birth and usually have ongoing contact with the family through the provision of postnatal care. Thus, it appears that the exploration of midwives' views and experiences of SAB could greatly enhance our understanding of this phenomenon. Other opportunities for qualitative enquiry are plentiful, and could include factors that impact on the children's experience, such as preparation, age, or place of birth; the support person's perspective and the sibling-baby relationship in a SAB context.

Previous research has identified that children' views on birth are influenced by attending a sibling's birth. This finding could be explored in more depth by talking to adults who experienced SAB as a child, to ask about their recollection of the birth and the impact the experience had on their own experiences of sexuality and childbirth. Such a study would also shed light on potential long-term effects of the SAB experience, which have received little attention in the research thus far.

7. Conclusion

At this point in time, SAB is not part of the mainstream birthing culture in the western world and thus many families may not be aware of the option of including older children at birth. The decision to have children present at birth is highly personal to each family. Even when given the opportunity, only some families will consider SAB as a viable option given their individual circumstances and preferences.

Many aspects of the SAB experience have been addressed in the body of research so far, but only some have been explored in depth. One well researched area is the short-term effect of witnessing birth on children's behaviour. Unanimously researchers agree that children do not show signs of trauma and severe distress, though differing levels of transient fear and anxiety have been described. Despite this observation, most researchers conclude that children experience birth as a positive, exciting and important life event. Parents also viewed their SAB experiences as overwhelmingly positive and reported a

heightened sense of family unity, which has been identified as one of the main motivating factors for choosing SAB.

Parents also reported choosing SAB to teach children about birth. Evidence of increased knowledge of physiological aspects of pregnancy and birth has been identified through children's drawings and recollections in various studies. A third strong motivating factor for SAB was the hope to improve sibling relationships and reduce sibling rivalry. Qualitative data suggests that many parents observed the desired effect in the weeks and months following birth, whereas quantitative studies reported divergent results, highlighting the complexity of using empirical methods to explore behavioural responses. Due to a lack of long-term studies, the effect of SAB on children's development and experiences of sexuality and birth in later life remains unknown. At this point in time, the body of research does not suggest a detrimental effect of SAB on children or other family members.

Those families that contemplate including their children at birth would likely benefit from having access to the research undertaken on this topic area, as well as supportive midwifery care. The results of this review suggest that information shared by the midwife should focus on how families can achieve an optimal SAB experience for all family members with the help of effective, age-appropriate information, a flexible attitude on the child's level of participation, adequate support during labour and birth and strategies to help children during the resolution and consolidation of the experience.

References

Anderson, S.V. (1979). Siblings at birth: A survey and study. *Birth, 6*(2), 80-87.

Anderson, S.V. (1981). Birth of siblings: Children's perceptions and interpretations. In S.V. Anderson & P. Simpkin (Eds.), *Birth-through children's eyes* (pp. 33-56). Seattle, WA: The Pennypress.

Anderson, S.V. (1983). *Childbirth through children's eyes* (Unpublished doctoral dissertation). University of Arizona, Tuscon, Arizona, USA.

Anderson, S.V. & Brown, L.J. (1979). A scientific study of siblings at birth. In D. Stewart (Ed.), *Compulsory hospitalization or freedom of choice in childbirth?* (3rd vol., pp. 877-895). Marble Hill, MO: National Association of Parents & Professionals for Safe Alternatives in Childbirth.

Ashley & Weaver (2012). Factors influencing multiparous women to choose a home birth: An Exploratory study. *British Journal of Midwifery, 20*(10), 710-715.

Babycentre. (n.d.). *Preparing your child to attend a sibling's birth.* Retrieved from http://www.babycenter.com/0_preparing-your-child-to-attend-a-siblingsbirth_176.bc

Bedwell, C., Houghton, G., Richens, Y. & Lavender, T. (2011). 'She can choose, as long as I'm happy with it': A qualitative study on expectant fathers' views of birthplace. *Sexual & Reproductive Healthcare, 2*(2), 71-75. doi: 10.1016/j.srhc.2010.12.001

Berkley Parents Network (n.d.). *Siblings at birth.* Retrieved from https://www.berkeleyparentsnetwork.org/advice/pregnancy/sibbirth

Bernhard, S.M. (1981). *An examination of the effects of family climate, developmental level, and presence at the birth on siblings of the newborn* (Unpublished doctoral dissertation). University of Colorado, Boulder, Colorado, USA.

Bernhard, C., Zielinski, R., Ackerson, K. & English, J. (2014). Home birth after hospital birth: Women's choices and reflections. *Journal of Midwifery and Women's Health, 59*(2), 160-166. doi: 10.1111/jmwh.12113

Best Apps for Kids. (n.d.). *Pregnancy apps for kids*. Retrieved from http://www.bestappsforkids.com/tag/pregnancy-apps-for-kids/

Birth Boot Camp. (n.d.). *Siblings at birth class*. Retrieved from http://birthbootcamp.com/childbirth-education/siblings-at-birth-class/

Boone, M. (2005). Siblings at birth. *New Beginnings, 22*(3), 116-7.

Booth, A. Papaioannou, D. & Sutton, A. (2012). *Systematic approaches to a successful literature review.* London: Sage Publications.

Boucher, D., Bennett, B., McFarlin, C. & Freeze, R. (2009). Staying home to give birth: Why women in the United States choose home birth. *Journal of Midwifery and Women's Health, 54*(2), 119-126. doi: 10.1016/j.jmwh.2008.09.006

Brubaker, S.J. & Dillaway, H.E. (2009). Medicalization, natural childbirth and birthing experiences. *Sociology Compass, 3*(1), 31-48. doi: 10.1111/j.17519020.2008.00183.x

Burke, P. (2008). *The effect of attachment security on the infant-sibling relationship following the birth of a second child* (Master's Thesis). Retrieved from ProQuest Dissertations and Theses Database. (UMI No. U591430)

Cassidy, K.M. (2001). *Preparing children to witness the birth of a sibling* (Unpublished master's thesis). San Diego State University, San Diego, California, USA.

Carolan, M. & Hodnett, M. (2007). 'With woman' philosophy: Examining the evidence, answering the questions. *Nursing inquiry,* 14(2), 140-152. doi: 10.1111/j.1440-1800.2007.00360.x

Caroline, H.M. & Fleming, V. (2011). The birth satisfaction scale. *International Journal of Health Care Quality Assurance, 24*(2), 124-135. doi: 10.1108/09526861111105086

Christiaens, W. & Bracke, P. (2009). Place of birth and satisfaction with childbirth in Belgium and the Netherlands. *Midwifery, 25*(2), 11-19. doi: 10.1016/j.midw.2007.02.001

Clancy, M.J. (1985). *Observation of sibling's birth: Its effect on young children's behaviour* (Unpublished master's thesis). Arizona State University, Tempe, Arizona, USA.

Coxon, K, Sandall, J. & Fulop, N.J. (2014). To what extent are women free to choose where to give birth? How discourses of risk, blame and responsibility influence birth place decisions. *Health, Risk and Society, 16(*1), 51-67. doi: 10.1080/13698575.2013.859231

Crowe, M. (2013). *Crowe Critical Appraisal Tool (CCAT) Version 1.4.* Retrieved from https://conchra.com.au/2015/12/08/crowe-critical-appraisal-tool-v1-4/

Crowe, M., Sheppard, L. & Campbell, A. (2011). Comparison of the effects of using the Crowe Critical Appraisal Tool vs informal appraisal in assessing health care research: A randomised trial. *International Journal for Evidence-Based Healthcare*, *9*(4), 444-449. doi: 10.1111/j.1744-1609.2011.00237.x

Daniels, M. (1983). The birth experience for the sibling: Description and evaluation of a program. *Journal of Nurse-Midwifery*, *28*(5), 15-22.

Davis, A. (2013). *Choice, policy and practice in maternity care since 1948*. Retrieved from http://www.historyandpolicy.org/policy-papers/papers/choice-policy-and-practicein-maternity-care-since-1948.

DelGiudice, G.T. (1984). *The factors promoting a positive sibling-attended birth in hospital* (Unpublished master's thesis). Yale University, New Haven, Connecticut, USA.

DelGiudice, G.T. (1986). The relationship between sibling jealousy and presence at a sibling's birth. *Birth: Issues in Perinatal Care*, *13*(4), 250-254.

Dolinar, P. A. & Mivsek, A. P. (2012). Siblings at birth. *Obzornik Zdravstvene Nege*, *46*(1), 75-82.

Dunn, J., Kendrick, C. & MacNamee, R. (1981). The reaction of first-born children to the birth of a sibling. *American Journal of Child Psychology and Psychiatry*. *22*(1), 1-18.

Durnin, B. (2016). *Siblings at birth: What were you thinking Jamie Oliver?* Retrieved from http://beckydurnin.ie/siblings-birth-jamie-jools-oliver/

England, A. (2011). *Allowing children to attend a sibling's birth: Would you?* Retrieved from https://www.babble.com/pregnancy/allowing-siblings-to-attend-a-bith/

Feldman, E. (1999). Birth and death: Through a child's eye. *Journal of the American Board of Family Practice*, *12*(4), 344-345.

Fink, A. (2010). *Conducting research literature reviews: From the internet to paper (3rd ed.).* London, U.K.: Sage Publication.

Foster, S. (2013). *Siblings at birth.* Retrieved from http://www.naturalparenting.com.au/siblings-at-birth/

Fragner, R.B. (1979). *A model for examining the psychological implications of children's participation in birth* (Doctoral dissertation). California School of Professional Psychology, Berkeley, California, USA.

Gaskin, I.M. (1990). *Spiritual midwifery*. Summertown, Tennessee, USA: The Book Publishing Company

Guilliland, K. & Pairman, S. (1994). The Midwifery partnership in New Zealand: A Model for practice. *The New Zealand College of Midwives Journal, 16*, 5-9.

Hammond, L.E. (1986). *Recollections and perceptions of childbirth among school-aged children who witness the birth event* (Unpublished master's thesis). University of Tennessee, Knoxville, Tennessee, USA.

Hartley, J. (2014). *Preparing your child to attend a sibling's birth.* Retrieved from http://www.essentialbaby.com.au/birth/options/preparing-your-child-to-attend-asiblings-birth-20141113-11lp9g

Hathaway, J. & Hathaway, M. (1978). *Children at birth.* Sherman Oaks, California, USA: Academy Publications.

Healy, S., Humphreys, E. & Kennedy, C. (2016). Midwives' and obstetricians' perspectives of risk and its impact on clinical practice and decision-making in labour: An Integrative review. *Women and Birth, 29*. 107-116. doi: 10.1016/j.wombi.2015.08.010.

Heartman, K. (2015). *Siblings at birth? No thanks.* Retrieved from http://www.mothering.com/articles/siblings-birth-thanks/

Hildingsson, I., Waldenström, U. & Radestad, I. (2003). Swedish women's interest in home birth and in-hospital birth centre care. *Birth*, *30*(1), 11-22. doi: 10.1046/j.1523536X.2003.00212.x

Hippie Housewife. (2012). *Preparing siblings for a homebirth*. Retrieved from http://hippiehousewife.blogspot.de/2012/07/preparing-siblings-for-homebirth.html

Hodnett, E.D., Downe, S., Edwards, N. & Walsh, D. (2005). Home-like versus conventional institutional settings for birth. *Cochrane Database of Systematic Reviews*, *2005*(1), doi: 10.1002/14651858.CD000012.pub2.

Hodnett, E.D., Downe, S. & Walsh, D. (2012). Alternative versus conventional institutional settings for birth. *Cochrane Database of Systematic Reviews*, *2012*(8). doi: 10.1002/14651858.CD000012.pub4

Houghton, G, Bedwell, C., Forsey, M., Baker, L. & Lavender, T. (2008). Factors influencing choice in birthplace: An Exploration of the views of women, their partners and professionals. *Evidence Based Midwifery, 6*(2), 59-64.

Hoyer, P.J.P. (1984). *Attachment, birth participation and young children's reaction to newborn siblings* (Unpublished doctoral thesis). Wayne State University, Detroit, Michigan, USA.

Hubner, J.N. (1980). *Effects of witnessing the birth of a sibling on children's concepts of procreation* (Unpublished master's thesis). San Francisco State University, San Francisco, California, USA.

Huggies.co.nz. (n.d.). *Siblings at birth*. Retrieved from https://www.huggies.co.nz/forum/4-pregnancy-birth/102-your-labour-and-birth/2153525-siblings-at-birth

Humrichouse, M. (1995). *A case study of the effects of a sibling-attended birth* (Unpublished master's thesis). Drake University, Des Moines, Indiana, USA.

Hunter, J. (2014). *Siblings at birth: Should children be present during childbirth?* Retrieved from https://www.bellybelly.com.au/birth/siblings-at-birth/

Interprofessional Task Force on Health Care of Women and Children. (1978). Joint position statement: The Development of family-centered maternity/newborn care in hospitals. *Journal of Obstetrics, Gynecologic and Neonatal Nursing, 7*(5), 55-59.

Isberg, R.S. & Greenberg, W.E. (1987). Siblings in the delivery room: Consultations to the obstetrical service. *Journal of the American Academy of Child and Adolescent Psychiatry*, *26*(2), 268-73.

Issokson, D.F. (1990). *A phenomenological study of children wo witness the birth of a sibling* (Unpublished doctoral thesis). Massachusetts School of Professional Psychology, Newton, MA.

Janssen, P.A., Carty, E.A. & Reime, B. (2006). Satisfaction with planned place of birth among midwifery clients in British Columbia. *Journal of Midwifery and Women's Health, 51*(2), 91-97. doi: 10.1016/j.jmwh.2005.10.012

Janssen, P.A., Henderson, A.D. & Vedam, S. (2009). The experience of planned home birth: Views of the first 500 women. *Birth*, *36*(4), 297-304. doi: 10.1111/j.1523536X.2009.00357.x.

Jouhki, M.R. (2012). Choosing homebirth: The women's perspective. *Women and Birth*, *25*, 56-61. doi: 10.1016/j.wombi.2011.10.002

Jouhki, M.R., Suominen, T., Peltonen, K., Åstedt-Kurki, P. (2015a). Participation in siblings' birth at home from children's viewpoint. *Midwifery, 34,* 150-157. doi: 10.1016/j.midw.2015.11.018

Jouhki, M.R., Suominen, T., Peltonen, K., Åstedt-Kurki, P. (2015b). Supporting and sharing – home birth: Fathers' perspective. *American Journal of Men's Health, 9*(5), 421-429. doi: 10.1177/1557988314549413

Katrak, P., Bialocerkowski, A.E., Massy-Westropp, N., Kumar, S. & Grimmer, K.A. (2004). A Systematic review of the content of critical appraisal tools. *BMC Biomedical Research Methodology, 4*(22), 22-33. doi: 10.1186/1471-2288-4-22

Kitzinger, S. (1979). *Birth at home*. Oxford, U.K.: Oxford University Press.

Kitzinger, S. (2002). Letter from Europe: What do we tell the children? *Birth, 29*(1), 60-61.

Kitzinger, S. (2015). *A passion for birth: My life, anthropology, family and feminism.* London: Pinter & Martin.

Klaus, M.H. & Kennell, J.H. (1982). Labour, birth and bonding. In M.H. Klaus & J.H. Kennell (Eds.), *Parent-infant bonding* (pp.22-109). St. Louis, Missouri, USA: Mosby.

Kowalczyk, L. (2012). *In a family way.* Retrieved from http://archive.boston.com/lifestyle/health/articles/2012/04/23/kids_in_the_delivery_room/?page=2

Krutsky, C. (1985). Siblings at birth: Impact on parents. *Journal of NurseMidwifery, 30*(5), 269-276.

Kuhn, J. & Kopcinski, E. (1984). Siblings at birth: Professional philosophy and preparation. *Health Care Women International, 5*(4), 223-32.

Kuramoto, N. (2008). Children present at the birth of a younger sibling, and the meaning of this experience. *Journal of Japan Academy of Midwifery, 22*(2), 124-135.

Lapp Cryns, Y. (n.d.). *Siblings and the homebirth setting*. Retrieved from http://www.compleatmother.com/homebirth/hb_siblings.htm

Legg, C., Sherick, I. & Wadland, W. (1974). Reaction of preschool children to the birth of a sibling. *Child Psychology and Human Development, 5*(1), 3-39.

Leonard, C.H., Irvin, N., Ballard, R.A., Ferris, C. & Clyman, R. (1979). Preliminary observations on the behaviour of children present at the birth of a sibling. *Pediatrics, 64*(6), 949-51.

Lindgren, H. & Erlandsson, K. (2011). She leads, he follows - Fathers' experiences of planned a home birth: A Swedish interview study. *Sexual & Reproductive Healthcare*, *2*(2), 65-70. doi: 10.1016/j.srhc.2010.12.002

Littlejohn, M. (2011). *Siblings at birth: The traveling midwife*. Retrieved from http://www.spiritualbirth.net/siblings-at-birth

Lumley, J. (1983). Preschool siblings at birth: Short-term effects. *Birth: Issues in Perinatal Care, 10*(1), 11-16.

Lutz, & Huit, (2004). Connecting cognitive development and constructivism: Implications from theory for instruction and assessment. *Constructivism in the Human Sciences*, *9*(1), 67-90. Retrieved from http://www.edpsycinteractive.org/papers/cogdev.pdf

Matusov, E. & Hayes, R. (2000). Sociocultural critique of Piaget and Vygotsky. *New Ideas in Psychology*, *18*, 215-239.

McGeachy, L.E. (1983). *Siblings at birth: Parental motivation and behavioural outcome* (Unpublished master's thesis). University of North Carolina, Capel Hill, North Carolina, USA.

Mehl, L., Brendsel, C. & Peterson, G. (1977). Children at birth: Effects and implications. *Journal of Sex and Marital Therapy*, *3*(4), 274-279.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G. & the PRISMA group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Annals of Internal Medicine, 151*(4), 264-269. doi:10.7326/0003-4819151-4-200908180-00135

Murray Davis, B., McNiven, P., McDonald, H., Malott, A., Elarar, L.& Hutton, E. (2012). Why homebirth? A qualitative study exploring women's decision making about place of birth in two Canadian provinces. *Midwifery*, *28*(5), 576-581. doi: http://dx.doi.org.op.idm.oclc.org/10.1016/j.midw.2012.01.013

National Collaborating Centre for Methods and Tools. (2013). *Defining your question for finding qualitative research: SPIDER tool*. Retrieved from http://www.nccmt.ca/resources/search/191.

New Zealand Midwifery Council. (2007). *Competencies for entry to the register of midwives.* Retrieved from https://www.midwiferycouncil.health.nz/sites/default/files/professionalstandards/

Competencies%20for%20Entry%20to%20the%20register%20of%20Midwives%202007%20new%20form.pdf

National Institute for Health and Care Excellence. (2012). *Methods for the development of NICE public health guidance* (3rd edition). Retrieved from https://www.nice.org.uk/process/pmg4/resources/methods-for-the-developmentof-nice-public-health-guidance-third-edition-pdf-2007967445701

Nolan, M. (1994). Big brother is watching.... *Modern Midwife, 11*, 8-11.

Ohm, J. (2015). *Siblings at birth: A rite of passage into the family.* Retrieved from http://pathwaystofamilywellness.org/Wellness-Lifestyle/siblings-at-birth-a-rite-ofpassage-into-the-family.html

Okubo, C., Sankai, C., Yanagisawa, H. & Kano, N. (2008). Witnessing the birth of a sibling: Looking at drawings to understand the possible effects on children. *Journal of Japan Academy of Midwifery*, *22*(2), 233-248.

O'Mara, P. (2015). *Siblings at birth.* Retrieved from http://www.peggyomara.com/2015/09/22/siblings-at-birth/

Parma, S. (1979). A family centred event? Preparing the child for sharing in the experience of childbirth. *Journal of Nurse Midwifery, 24*(3), 5-10.

Pekin, K. (2015). *Preparing your kids for your homebirth.* Retrieved from https://birthoutsidethebox.wordpress.com/2015/03/18/preparing-your-kids-foryour-home-birth/

Perez, P. (1979). Nurturing children who attend the birth of a sibling. *American Journal of Maternal and Child Nursing*, *4*(4), 215-8.

Pestlin, K. (1999). Preparing older siblings for birth: Tips to consider. *Midwifery Today Childbirth Education, 22*(3), 20.

Peterson, G. (1993). *Siblings at birth: Guidelines for preparation and sibling bonding.* Retrieved from http://www.askdrgayle.com/html/sab.html

Piaget, J. (1952). *The origins of intelligence in children.* London: Routledge & Kegan Paul.

Pluye, P., Robert, E., Cargo, M., Bartlett, G., O'Cathain, A., Griffiths, F., Boardman, F., Gagnon, M.P., & Rousseau, M.C. (2011). *Proposal: A mixed methods appraisal tool for systematic mixed studies reviews*. Retrieved from http://mixedmethodsappraisaltoolpublic.pbworks.com

Popay, J., Roberts, H., Snowden, A., Petticrew, M., Arai, L., Rodgers, M. & Britten, N. (2006). *Guidance on the conduct of narrative synthesis in systematic reviews. A product from the ESRC methods programme.* Retrieved from https://www.researchgate.net/publication/233866356_Guidance_on_the_conduct_of_narrative_synthesis_in_systematic_reviews_A_product_from_the_ESRC_Met hods_Programme

Pregnancy Info.net. (n.d.) *Should siblings witness the birth?* Retrieved from http://www.pregnancy-info.net/should-i-allow-my-other-children-to-witness-tehbirth-of-their-sibling.html

Ridley, D. (2012). *The literature review: A step by step guide for students*. (2nd ed.). London: SAGE

Romero, C. (1984). A family affair: Children at birth. *Mothering. Winter,* 58-65.

Rosemary Birthing Home. (n.d.). *Big Siblings*. Retrieved from http://www.rosemarybirthinghome.com/for-expecting-families/big-siblings/

Rüdiger, J. (2014). *Preparing young siblings for home birth.* Retrieved from http://www.moonstonemidwiferycare.com/blog/preparing-young-siblings-forhome-birth/

Shea, A. & Webster, N. (1990). *Siblings at birth: Factors that affect a family-centred experience* (Unpublished master's thesis). Yale University, New Haven, Connecticut, USA.

Scaer, R. & Korte, D. (1978). MOM survey: Maternity options for mothers: What do women want in maternity care? *Birth, 5*(1), 20-26.

Simkin, P. (1993). When should a child attend a sibling's birth? A guideline for parents. *Midwifery Today Childbirth Education, 17*(2), 16.

Sjöblom, I., Nordström, B. & Edberg, A.-K. (2006). A Qualitative study of women's experiences of home birth in Sweden. *Midwifery, 22*(6), 348-355. doi: 10.1016/j.midw.2005.11.004

Sugawara, M. (2008). *Preschool children's behaviour during the birth of a sibling* (Unpublished thesis). St. Luke's College of Nursing, Tokyo, Japan.

Sweeney, S. & O'Connell, R. (2015). Puts the magic back into life: Fathers' experience of planned home birth. *Women & Birth, 28*(2), 148-153. doi: 10.1016/j.wombi.2014.12.001

Trause, M.A. (1978). Birth in the hospital: The Effect on the sibling. *Birth, 5*(4), 207-210.

Trause, M.A. & Irivin, N.A. (1982). Care of the sibling. In M.H. Klaus & J.H. Kennel (Eds.), *Parent-infant bonding* (pp.110-129). St. Louis, MS: Mosby.

Tumpson, A.J. (1979). *Preparing young children to witness the birth of a sibling: A prospectus for a children's book on childbirth* (Unpublished master's thesis). Sonoma State University, Rohnert Park, California, USA.

Volling, B.L., Kennedy, D.E. & Jackey, L.M. (2010). The development of sibling jealousy. In S.L. Hart & Legerstee, M. (Eds.), *Handbook of jealousy, theory, research and multidisciplinary approaches* (pp. 387-417). Chichester, U.K.: Wiley- Blackwell.

Wattis, L. (2015). *FAQs about having siblings at births*. Retrieved from http://www.newbaby101.com.au/faqs-about-having-siblings-at-a-birth/

Wayne, L. (2011). *Preparing an older sibling for a new birth*. Retrieved from http://www.phdinparenting.com/blog/2011/3/23/preparing-an-older-sibling-for-anew-birth.html

Wertz, R.W. & Wertz, D.C. (1977). *Lying in: A history of childbirth in America.* New York: The Free Press.

Whittemore, R. & Knafl, K. (2005). The integrative review: Updated methodology. *Journal of Advanced Nursing, 52*(5), 546-553.

Wright, S. (n.d.). *Siblings at a homebirth*. Retrieved from http://www.gentlebirth.org/archives/swsiblings.html

Yeagly, S. (1985). *Siblings at birth: Long term effects* (Unpublished master's thesis). Vanderbilt University, Nashville, Tennessee, USA.

Appendix A: Description of grey literature sources

Google scholar: allows a broad search for scholarly literature across many disciplines and sources: articles, theses, books, abstracts and court opinions, from academic publishers, professional societies, online repositories, universities and other web sites.

Grey literature report: database archive of the bimonthly publication of the New York Academy of Medicine alerting to new grey literature publications in health services research and selected public health topics.

Base (Bielefeld Academic Search Engine): voluminous international search engine designed specifically for academic open access resources, operated by the German university library Bielefeld, includes grey literature sources.

Open Grey: system for information on grey literature in Europe. Open access database containing various scientific grey literature sources from Europe. Covers the subject areas science, technology, biomedical science, economics, social science and humanities.

Popline: provides access to numerous international publications and resources related to family planning and reproductive health, includes grey literature.

ClinicalTrials.govt: service of the U.S. National Institutes of Health. Results database of observational and experimental research studies involving human participants based in the U.S. and other countries. Includes preliminary results from ongoing studies.

Virginia Henderson Global Nursing e-Repository: database dedicated to sharing nursing research and evidence-based practice materials created by nurses, includes grey literature sources.

British Library EThOS (Electronic Theses Online Service): UK national doctoral research thesis service, lists and gives access to theses awarded by UK higher education institutions.

Involve Research Project database: UK database of published and unpublished research projects in the fields of health, public health and social care involving human participants.

World Cat: global network of library content and services. Allows searching by document type and contains theses.

World Wide Science: global science gateway comprised of scientific databases and portals, uses translations technologies to overcome language barriers.

Open Access Dissertations and Theses: resource for finding open access global theses and dissertations.

New Zealand research: provides access to a comprehensive selection of New Zealand research papers and related resources from numerous research organisations, universities and polytechnics.

PQDT Open: provides access to global dissertations and theses from the Proquest dissertations and theses database, where authors have opted to publish as open access.

Explore the British Library: searches the British library website and catalogues. Allows searching by document type and includes grey literature sources.

Social Science Research Network eLibrary: Gives access to global social science research papers, includes grey literature sources.

Google: searched by domain (.org)

Appendix B: Succinct information on each study

Anderson (1981): U.S., Book chapter

Aims and objectives	What is the child's perception and interpretation of SAB?
Setting and participants	Total of 58 children, 31 experienced SAB at home more than 12 months prior, 27 did not experience SAB. Ages of children not stated. 29 girls and 29 boys.
Study design and data collection	Qualitative study, approach not specified. Structured one on one interviews with children in their homes, children asked to draw pictures.
Data analysis	Pictures analysed based on general content and mood. Analysis of interview data not described, thematic analysis evident.
Appraisal a) quality assurance b) limitations c) CCAT score	a) Pictures analysed by multiple researchers. b) Only selection of pictures published, method of selection not clear. Little reporting of data gathered during interviews. Conclusions not consistent with strength of data. No consideration of ethical matters. c) 19/40 (43%)
Key messages	SAB children tended to draw colourful and detailed pictures of the birth which focused on people and emotions. Non- SAB children tended to draw mothers alone or in company of the doctor/midwife, less colour and detail. Author concludes that SAB is a happy family event for children, which should be made available to families regardless of place of birth.

Anderson (1983): U.S., Unpublished thesis

Aims and objectives	What is the 6-12 year old' view of birth? How do children conceptualise birth in American culture? What factors influence children's participation at birth?
Setting and participants	14 children aged 6-12 years from 7 different families who attended a sibling's birth, 8 girls and 6 boys. 6 homebirths, 1 planned hospital birth.
Study design and data collection	Qualitative research using ethnographic approach. Series of 3-5 ethnographic interviews with each child undertaken over the course of 4 months. Children's drawings included in data collection.
Data analysis	Analysis follows ethnographic approach: data sorted into different domains. Similarities and differences among domains displayed in taxonomies and contrast sets. Formation of themes.
Appraisal a) quality assurance b) limitations c) CCAT score	a) Findings validated by 6 children who acted as key informants. Series of interviews allowed researcher to establish rapport and generated rich data b) Unclear how long after birth the interviews took place. c) 39/40: 98%
Key messages	Children conceptualised birth as a family event that triggered curiosity, uncertainty and fears. Children viewed birth at times as gross and scary, but did not want to miss being there to see, to help and to learn. Numerous factors influenced children's experience of birth, such as family lifestyle, level of preparation and support.

Anderson & Brown (1979): U.S., Book chapter

Aims and objectives	What activities do families take up in preparation for the baby? What is the reaction of children to the birth and the new baby? What is the parent's experience? How is the long-term sibling relationship affected?
Setting and participants	25 families (43 children aged 1-16 years old) who experienced SAB at home, 25 families (39 children) who did not experience SAB and had a hospital birth. Mothers were the main informants. Sexes of children not stated.
Study design and data collection	Mixed methods approach. Structured interviews with open- and closed-ended questions. Sibling rating scale formulated to assess postnatal behaviour. Time between birth and interviews not stated.
Data analysis	Analysis not described. Results of closed ended questions and sibling rating scale are reported using frequency distributions. No statistical calculations. Results from open-ended questions reported descriptively, some quotes used.
Appraisal a) quality assurance b) limitations c) CCAT score	a) Large sample. Open-ended questions included. b) Presence of children during interviews may have biased mothers' responses. No statistical calculations to take into account potential confounding variables. c) 28/40 (70%)
Key messages	SAB families prepared their children earlier and more thoroughly for the birth of the baby. The SAB experience was described as overwhelmingly positive for parents and children. Early sibling bonding was observed. SAB mothers reported less regressive and aggressive behaviour from their children than Non-SAB mothers.

Bernhard (1981): U.S., Unpublished thesis

Aims and objectives	What is the emotional and behavioural effect that family climate and developmental stage have on children who did and did not experience SAB?
Setting and participants	Total of 56 children (25 SAB and 31 No- SAB children) aged 1-12 years old. Births took place at home, in a birthing unit, or in a hospital for the non-SAB children. SAB children attended births at home or in a birthing unit. 28 boys and 28 girls.
Study design and data collection	Mixed methods approach. Structured interviews with parents and children prenatally, at 2-4 weeks and again at 2-3 months after the birth. Completion of family climate assessment tool by parents. Completion of child behavioural checklist by parents and adjectives checklist by children at every data collection point.
Data analysis	Quantitatively driven analysis. Numerical values assigned for family climate tool results, behavioural checklist and adjective checklist. Children assigned into 3 groups based on developmental level and into 2 groups based on participation at birth. Relationship between variables was calculated using different statistical tools. Interview data used to supplement quantitative results.
Appraisal a) quality assurance b) limitations c) CCAT score	a) More than one method of data collection, assessment of children's behaviour by both the child and the parents b) Interviews with parents and children only supplement quantitative findings, discussion of findings based in part on unfounded interpretations of data. c) 32/40 (80%)

Key messages	Both family climate and developmental stage impacted children's behaviours and emotions before and after the birth of a sibling. Presence or absence at a sibling's birth had less of an effect on children's behaviour. SAB linked to more negative behaviour postnatally.

Clancy (1985): U.S., Unpublished thesis

Aims and objectives	Is there a difference in behaviours associated with attachment, regression and aggression 6-10 months after the birth between children who did and did not experience SAB?
Setting and participants	38 mothers who gave birth 6-10 months prior in a hospital or birthing unit. 19 women had a SAB, and 19 women did not. Total of 50 children (25 SAB, 25 No-SAB) aged 2-6 years old. 22 boys and 18 girls.
Study design and data collection	Questionnaire sent out via mail. All questions apart from the final question were closed ended, but some allowed space to specify if none of the given options applied. Sibling rating scale based on Anderson & Brown's tool used.
Data analysis	Statistical analysis. Sibling rating scale responses converted to numerical values and compared between the two groups. Various statistical calculations undertaken to identify statistical significance and confounding variables.
Appraisal a) quality assurance b) limitations c) CCAT score	a) Sibling rating scale refined in response to thorough literature review and consultation with 3 child development experts. Confounding variables included in analysis. b) Closed-ended questions limit richness of data collected. Potential for biased reporting of children's behaviours of mothers. c) 33/40 (83%)
Key messages	SAB children and Non-SAB children had high scores for attachment, which were not significantly different. Scores for aggression and regression were low in both groups, with SAB children showing significantly less aggressive and regressive behaviour compared to Non-SAB children. Younger children were significantly more likely to display aggressive behaviour. SAB children received more preparation for the birth.

Daniels (1983): U.S., Journal article

Aims and objectives	Description and evaluation of children's SAB experience as part of a birthing unit based program.
Setting and participants	The first 35 children aged 2-15 years old. who experienced SAB after it was made available. 27 girls and 8 boys.
Study design and data collection	Qualitative study, approach not specified. Primary data gathered from informal interviews with children, usually at home. Additional data in the form of unstructured interviews with mothers, some fathers, attending midwives and support people.
Data analysis	Data analysis not discussed in detail. Use of a rating scale for each child's experience, which appoints a plus/minus value to 14 different items based on an "ideal" SAB experience.
Appraisal a) quality assurance b) limitations c) CCAT score	a) Child's experience assessed using multiple sources. b) Rating system used for data analysis not suitable. No consideration of ethical matters. c)18/40 (45%)

Key messages	SAB is a complex and intense experience. Children felt close and included, frightened, overwhelmed and joyful. They learned through witnessing processes of pregnancy and birth. They saw their mother working hard and being supported by good people.

DelGiudice (1984): U.S., Unpublished thesis

Aims and objectives	Why and how do parents chose SAB? Is SAB a positive experience for the family? What factors in the hospital setting facilitate or hinder the experience?
Setting and participants	23 parents who planned a SAB at a hospital. Total of 35 children aged 2-13 years old. No information on sexes of the children.
Study design and data collection	Descriptive survey study using questionnaires, one filled in prior to birth and one after the birth. Questionnaires collected demographic information, otherwise made up of only open-ended questions.
Data analysis	Demographic data analysed by means of frequency distribution. Development of categories and themes through recording of responses. Quotes used to illustrate themes.
Appraisal a) quality assurance b) limitations c) CCAT score	a) Anonymous questionnaires limit interview bias. b) Richness of data limited through data collection method. Unbalanced and at times unclear reporting of responses c) 29/40 (73%)
Key messages	Parents chose SAB to promote family bonding and ease the transition of gaining a new family member. Mothers' ability to cope with labour, the presence of a support person and nurses' attitudes towards SAB were vital factors in the experience.

DelGiudice (1986): U.S., Journal article

Aims and objectives	Does the incidence of sibling rivalry differ between children who did and did not experience SAB?
Setting and participants	28 children from 22 families 2-16 years old. 17 girls and 11 boys. 12 children experienced SAB within the last 2 years and 16 did not. All births took place in a hospital setting which allows for SAB.
Study design and data collection	Descriptive survey study. Questionnaires filled in by mothers, include demographic information, sibling rating scale based on Anderson & Brown's tool and 2 open-ended questions to assess extend of sibling preparation and child's response to the baby
Data analysis	Statistical analysis. Numerical value assigned to each Likert statement. Overall and individual scores compared between groups. Age, sex and interval between birth and study used in one-way analysis of covariance. Frequency of similar responses to open-ended questions noted.
Appraisal a) quality assurance b) limitations c) CCAT score	a) Transparent methodology and reporting of results. b) Small sample size for a survey study. Complex sibling relationship may be better assessed using qualitative approach. c) 28/40 (70%)
Key messages	No statistically significant difference in sibling rivalry related behaviour in the two groups. Mothers of SAB children were more likely to describe their child's behaviour toward the new baby as "caring, mothering or protective".

Fragner (1979): U.S., Unpublished thesis

Aims and objectives	What factors affect the SAB experience for the child? Formulation of a theoretical model.
Setting and participants	Maximum variation sample of 5 families who experienced SAB in a variety of settings (home and birthing unit births, rural and urban settings, differing levels of participation in the birth). Total of 15 children aged 2-12 years old. 8 girls and 7 boys.
Study design and data collection	Qualitative, case study design. Parents were interviewed on 4 occasion and children were interviewed once. 2 families were observed during birth. Interviews took place at home, open-ended and semi-structured.
Data analysis	Focus on confirming or extending a theoretical framework derived from a literature review. Data repeatedly examined in detail. Emergence of themes documented during this process. Interview material and birth observations discussed with a secondary researcher.
Appraisal a) quality assurance b) limitations c) CCAT score	a) Rich data due to multiple interviews and in-depth discussion of findings. b) Use of more tables and a more concise writing style needed to better illustrate findings. c) 36/40 (90%)
Key messages	Congruence with family lifestyle, parental motivation for SAB, preparation and birth setting (including support people) all influenced the child's experience of SAB. SAB can lead to feelings of self-growth and family affiliation in children. The importance of an overall positive emotional atmosphere during the birth is highlighted as essential for a positive SAB experience.

Hammond (1986): U.S., Unpublished thesis

Aims and objectives	What are the recollections and perception of birth of 6-12 year old children who experienced SAB? What information should be provided to guide parents considering SAB?
Setting and participants	5 children (3 girls and 2 boys) from 4 families 6-9 years old who experiences SAB 6-11 months prior in the same hospital setting with the same midwife.
Study design and data collection	Qualitative, phenomenological approach. All children were interviewed at home on 2 separate occasions. Children were also asked to draw pictures. Parents filled in demographic questionnaire, which included circumstances around birth.
Data analysis	Children's responses were coded into pre-set categories derived from Anderson's thesis (1983). Content of categories presented descriptively.
Appraisal a) quality assurance b) limitations c) CCAT score	a) Data coding undertaken by two researchers, inter-rater reliability assessed. b) Data not as rich compared to other child's view studies, possibly due to deductive coding method and/or small sample size. c) 35/40 (88%)
Key messages	Overall responses of the children to birth were positive, with little mention of negative feelings. Children were excited to be part of the experience and learn through it. They placed high significance on witnessing the event and viewed birth as a natural part of a child's life.

Hoyer (1984): U.S., Unpublished Thesis

Aims and objectives	Does the levels of attachment between mother and child and the degree of birth participation impact on the child's behaviour towards the new baby in the first two weeks of life?
Setting and participants	86 families, 1 target child per family aged 2-4 years old. 53 boys and 33 girls. All births took place in one birthing unit, all children had attended the same type of preparation class.
Study design and data collection	Quasi-experimental design. Mother/child attachment: observation of child and mother during reunion after the admissions procedure according to Ainsworth's strange situation tool. Birth participation: divided into 3 groups after the birth (present in the room during birth, waited outside the room, left and waited at home). Sibling interaction: questionnaire (Sibling Rating Scale) answered by mothers via telephone 2 days and 2 weeks after the birth. Home visit on day 3 to repeat
	sibling rating scale and validate child's behaviour through observation. weeks after the birth.
Data analysis	Relationship between the three variables was calculated using several different statistical tools, potential confounding variables taken into consideration.
Appraisal a) quality assurance b) limitations c) CCAT score	a) Pilot study undertaken. Reliability of data collection increased through various methods. Narrow age range, same birth setting and similar birth preparation decrease some of the potential variables. Large sample. b) Tool to assess mother/child attachment not validated in the study context c) 37/40 (93%)
Key messages	Children rated as being securely attached to the mother had more positive and less negative interactions with the baby. Children who were present at birth displayed more aggressive behaviour compared to children who left or were in the next room at birth. Those children who were in the next room during the birth had the lowest aggression scales.

Hubner (1980): U.S., Unpublished thesis

Aims and objectives	What is the effect of witnessing birth on children's understanding of procreation?
Setting and participants	10 children aged 3-5 years old who experienced SAB at home or in a birthing unit 4-15 months prior. 8 girls and 2 boys.
Study design and data collection	Mixed-methods approach. Structured interviews with children using 2 preexisting tools to evaluate knowledge of procreation (origin of babies tool) and a physical phenomenon (origin of night). Both tools consist of open-ended questions. Interviews with parents to assessed extend of SAB preparation.
Data analysis	Data from both tools scored according to pre-existing scoring systems. Scores compared to another study undertaken 8 years prior with Non-SAB children and analysed using various statistical calculations. Qualitative data from children's open ended answers analysed descriptively. Numerous and lengthy quotes used to illustrate findings.

Appraisal a) quality assurance b) limitations c) CCAT score	a) Pilot study undertaken to increase interviewer skill. Scoring undertaken by another researcher, high inter-rater reliability. Analysis of qualitative data adds important findings. b) Origin of babies tool includes knowledge of conception, about which children do not necessarily gain knowledge during SAB experience. Long timeframe between birth and study. No control group used, findings compared to another study instead. c) 26/40 (65%)
Key messages	Children had a better understanding of the origin of night than of procreation. Witnessing birth did not lead to higher knowledge of procreation tool scores, compared to Non-SAB children. Qualitative data showed children have a rich and detailed understanding of birth following SAB.

Isberg & Greenberg (1987): U.S., Journal article

Aims and objectives	Evaluation of families who planned and in part experienced SAB by a child psychiatrist.
Setting and participants	22 families who planned a SAB at a hospital. 27 children in total aged 2-17 years old. 10 boys and 17 girls.
Study design and data collection	Qualitative approach. Semi-structured interviews at home or in an hospital office prenatally with parents and play interviews with children. Interviews 1-8 months after the birth with parents and children, some conducted over the phone.
Data analysis	Method of analysis not stated. Descriptive and partly statistical analysis evident from findings.
Appraisal a) quality assurance b) limitations c) CCAT score	a) Data collected through interviews with both parents and children at more than one point in time. b) Study has no clear objective, recruitment into study not explained, unbalanced reporting of findings. c) 24/40 (60%)
Key messages	Children expressed more anxiety than was recognised by parents. No signs of trauma in any of the children. Unreserved endorsement of sibling attendance not supported.

Issokson (1990): U.S., Unpublished thesis

Aims and objectives	How do children experience birth? How do they integrate the experience?
Setting and participants	12 children aged 5-7 years old (5 boys and 7 girls) who witnessed SAB 1-2 years prior at home or in the hospital.
Study design and data collection	Qualitative, phenomenological approach. Single structured interviews undertaken in various settings. Parents contributed information regarding demographics and circumstances around birth through a questionnaire.
Data analysis	Data sorted into themes and categories. Latent data included in analysis.
Appraisal a) quality assurance b) limitations c) CCAT score	a) Pilot study undertaken. In-depth exploration of findings. b) No documentation of ethical approval sought. c) 39/40 (98%)

Key messages	Witnessing SAB is a neutral to positive experience. Children's descriptions were filled with enjoyment, pride and awareness of the mother's hard work. No reports of anxiety or trauma. Happiness derived from the experience in part due to feelings of family togetherness.

Jouhki et al (2015a): Finland, Journal article

Aims and objectives	What is the meaning of children's experiences of SAB at home?
Setting and participants	7 children aged 5-17 years old who had a SAB at home. No mention of the children's sexes.
Study design and data collection	Qualitative, phenomenological approach. Children chose data collection method: drawing a picture and/or giving an unstructured interview. Data collection took place at the child's home.
Data analysis	Colazzi's approach used. Significant statements extracted and coded. Formulated meanings spelled out and clustered into themes. Quotes used to illustrate themes. Analysis of pictures not sufficiently explained.
Appraisal a) quality assurance b) limitations c) CCAT score	a) All of the authors participated in data analysis. Each step in the research process outlined clearly. b) Uniform data collection method may have elicited richer data. c) 36/40 (90%)
Key messages	Children's experiences of SAB at home elicited strong feelings ranging from joy to worry. The experience was rewarding, as children could support their mother and learned about pregnancy and birth. Family relation were strengthened.

Krutsky (1985): U.S., Journal article

Aims and objectives	What are parents' decision making processes around SAB? How does SAB affect parents?
Setting and participants	32 parents (16 couples) who had a SAB at a community hospital. 30 children (16 boys and 14 girls aged 2-18 years old) attended the births.
Study design and data collection	Qualitative approach. Face to face interviews in the participant's home, following a structured, openended format. Fathers and mothers interviewed separately.
Data analysis	Thematic analysis. Responses grouped into categories. Frequencies of responses portrayed using percentages. Participants quotes used to illustrate categories.
Appraisal a) quality assurance b) limitations c) CCAT score	a) Quotes used to illustrate categories and themes b) Information missing on ethical considerations. Little discussion of findings. c) 26/40 (65%)
Key messages	Parents reported that children's presence at birth added feelings of family unity. Children's presence was a small part of the larger positive feelings about the birth experience. Parents who had had children present at birth would have a SAB again in the future.

Leonard et al (1979): U.S., Journal article

Aims and objectives	How do children behave during SAB?
Setting and participants	40 children aged 1-14 years old, who experienced SAB in a birthing unit setting. 12 boys and 28 girls.
Study design and data collection	Observational study. Children's behaviour during SAB observed. Documented using a modified version of Gough's adjectives checklist.
Data analysis	Data analysis not described. Description of children's behaviour goes beyond a checklist analysis.
Appraisal a) quality assurance b) limitations c) CCAT score	a) Direct observation of children during SAB a valid approach. b) Method of data collection and analysis unclear. Unbalanced reporting of results, very little mention of positive behaviour. Study conclusion not consistent with strength of data. c) 14/40 (35%)
Key messages	No child displayed extreme distress, but some parts of SAB were distressing to some children. Children watched the process of birth, attended to the newborn and then quickly resumed regular activities, birth therefore is primarily an adult event.

Lumley (1983): Australia, Journal article

Aims and objectives	Are there differences in the level of sibling preparation between children who did and did not experience SAB? Does the incidence of sibling rivalry differ between children who did and did not experience SAB?
Setting and participants	First 100 siblings aged 1-4 years old at the birth of the new baby, which occurred in a newly opened birthing unit. 22 children present at the birth, 78 not present. Total of 55 girls, 55 boys.
Study design and data collection	Survey study. Questionnaire sent by mail 2 months after the birth. Closedended questions used only.
Data analysis	Statistical analysis, mainly using frequency distributions. Postnatal behaviour of SAB children compared with matched control group using Wilcoxon matched-pair singed rank test.
Appraisal a) quality assurance b) limitations c) CCAT score	a) Confounding variables considered such as age, level of preparation and length of separation in Non-SAB group. b) Ethical matters not explored. Limited literature review. Little exploration of practical usefulness of the results or impact on future research. c) 25/40 (63%)
Key messages	There were no differences in the amount of sibling preparation in SAB and Non-SAB groups. Half of the parents reported signs of fear in their children during SAB, no occurrences of major distress. When grouped together, SAB children were more likely to display aggressive behaviour after the birth.

McGeachy (1983): U.S., Unpublished thesis

Aims and objectives	Are there differences in parental beliefs and motivational factors in families deciding for or against SAB? Are there differences in how children who did and did not experience SAB adjust to the baby?
Setting and participants	21 women who chose SAB and 26 women who did not chose SAB, but had uncomplicated pregnancies and births. Participants birthed at a hospital, birthing unit or at home in the 6 months prior to the study. Total of 46 children aged 2-12 years old. No mention of the children's sexes.
Study design and data collection	Survey study. Questionnaire sent by mail consisting of four parts: 1) socio-demographic characteristics 2) preparation of children, participation during birth, child's behaviour towards baby 3) validated tool to assess parental modernity in childrearing 4) parental motivation for or against SAB
Data analysis	Statistical analysis. Includes the use of several statistical analysis tools and calculations. Responses to a small number of open-ended questions presented descriptively. Many women added lengthy descriptions and letters without being prompted, the content of these is presented descriptively.
Appraisal a) quality assurance b) limitations c) CCAT score	a) Sound statistical analysis, confounding variables identified. Use of validated data collection tool. b) Low response rate for women who did not choose SAB (40%), no followup. The fact that many women added information without being prompted shows more open-ended questions may have been beneficial. c) 34/40 (85%)
Key messages	Families who chose SAB did not differ in terms of socio-demographic characteristics, but scored higher on parental modernity scale and were more likely to have a homebirth. Children who experienced SAB showed less aggressive behaviour compared to children who did not. Mothers made a deliberate choice to include their child at birth.

Mehl et al (1977): U.S., Journal article

Aims and objectives	What is the attitudinal and emotional context of SAB? What are the effects on the child?
Setting and participants	20 children aged 2-14 years old, who were present at birth and 20 children not present at birth in the same age range as well as their parents. Births occurred at home. No mention of the children's sexes.
Study design and data collection	Qualitative study. Interviews with parents and children. Children were observed during play and SAB children were also observed during labour birth.
Data analysis	Data analysis is not discussed, thematic analysis evident.
Appraisal a) quality assurance b) limitations c) CCAT score	a) Observation of children more likely to provide valid data than parent's interpretation. b) Lack of information on methodology limits quality assessment. c) 23/40 (55%)
Key messages	Parents who chose SAB had a more open attitude towards sexuality. Witnessing birth led to children forming realistic notions of birth. Children experienced birth as a positive, natural process. Older children were more involved in the experience, but all required adult support during SAB.

Okubo (2008): Japan, Journal article

Aims and objectives	What can children's drawings tell us about the psychological and emotional impact of SAB on children?
Setting and participants	24 children from 17 families aged 2-12 years old who planned for a SAB in a birthing unit or at home. 14 boys and 10 girls.
Study design and data collection	Qualitative approach, design not specified. Children were asked to draw when and what they wanted during the last months of pregnancy, during or soon after birth and in the first month postpartum. Mothers used forms to record child's comments and behaviours while drawing. Mothers and preschool children interviewed together at 4 weeks postpartum, older children interviewed separately.
Data analysis	Drawings analysed for dramatic shifts, signs of development, stasis or regression. Analysis of data gained from interviews and mothers' forms not described.
Appraisal a) quality assurance b) limitations c) CCAT score	a) The researcher is an art therapist and therefore eloquent in the evaluation of the drawings. b) Shallow literature review, no evidence considered in discussion section. c)31/40 (78%)
Key messages	Children who witnessed birth expressed pride and joy in being part of the experience. No signs of severe distress or trauma in children's artwork. 4 children showed signs of regression in their artwork, one of these children was present at birth. Importance of family support throughout SAB experience emphasized.

Shea & Webster (1990): U.S., Unpublished thesis

Aims and objectives	What elements facilitate or hinder the SAB experience?
Setting and participants	63 families who planned a SAB either at home (20%), in a hospital (76%) or in a birthing unit (3%). Total of 102 children aged 1-19 years old, 55 girls and 47 boys.
Study design and data collection	Descriptive survey study. Questionnaire mailed to families 4 months to 2 years after SAB experience, containing open-ended and closed-ended questions.
Data analysis	Demographic data analysed using descriptive statistics. Closed-ended questions analysed using frequency distribution. Data from open-ended questions coded into categories using a two-step process. Quotes used to illustrate categories.
Appraisal a) quality assurance b) limitations	a) Large sample, transparent methodology. b) Response rate not stated. Interviews or focus groups could have provided richer data. c) 33/40(83%)
c) CCAT score	

Key messages	SAB influenced decision making processes regarding place of birth and care provider and in turn these aspects impact on the SAB experience. Preparation of children for SAB and presence of appropriate support person viewed as important influencing factor for outcome of SAB. Postnatal resolution of the experience needs more attention from care providers.

Crowe Critical Appraisal Tool (CCAT) Form (v1.4)

Reference | Reviewer

This form must be used in conjunction with the CCAT User Guide (v1.4); otherwise validity and reliability may be severely compromised.

Citation

	Year

Research design (add if not listed)

❑ Not research		Article | Editorial | Report | Opinion | Guideline | Pamphlet | …
❑ Historical		…
❑ Qualitative		Narrative | Phenomenology | Ethnography | Grounded theory | Narrative case study | …
❑ Descriptive, Exploratory, Observational		A. Cross-sectional | Longitudinal | Retrospective | Prospective | Correlational | Predictive | …
		B. Cohort | Case-control | Survey | Developmental | Normative | Case study | …
Experimental	❑ True experiment	Pre-test/post-test control group | Solomon four-group | Post-test only control group | Randomised two-factor | Placebo controlled trial | …
	❑ Quasi-experiment	Post-test only | Non-equivalent control group | Counter balanced *(cross-over)* | Multiple time series | Separate sample pre-test post-test [no Control] [Control] | …
	❑ Single system	One-shot experimental *(case study)* | Simple time series | One group pre-test/post-test | Interactive | Multiple baseline | Within subjects *(Equivalent time, repeated measures, multiple treatment)* | …
❑ Mixed Methods		Action research | Sequential | Concurrent | Transformative | …
❑ Synthesis		Systematic review | Critical review | Thematic synthesis | Meta-ethnography | Narrative synthesis | …
❑ Other		…

Variables and analysis

Intervention(s), Treatment(s), Exposure(s)	Outcome(s), Output(s), Predictor(s), Measure(s)	Data analysis method(s)

Sampling

Total size		Group 1		Group 2		Group 3		Group 4		Control	
Population, sample, setting											

Data collection (add if not listed)

Audit/Review	a) Primary | Secondary | … b) Authoritative | Partisan | Antagonist | … c) Literature | Systematic | …	Interview	a) Formal | Informal | … b) Structured | Semi-structured | Unstructured | … c) One-on-one | Group | Multiple | Self-administered | …
Observation	a) Participant | Non-participant | … b) Structured | Semi-structured | Unstructured | … c) Covert | Candid | …	Testing	a) Standardised | Norm-ref | Criterion-ref | Ipsative | … b) Objective | Subjective | … c) One-on-one | Group | Self-administered | …

Scores

Preliminaries		Design		Data Collection		Results		Total [/40]	
Introduction		Sampling		Ethical Matters		Discussion		Total [%]	

General notes

Appraise research on the merits of the research design used, not against other research designs.

Category Item	Item descriptors [☑ Present; ☒ Absent; ■ Not applicable]	Description [Important information for each item]	Score [0–5]
1. Preliminaries			
Title	1. Includes study aims ❑ and design ❑		
Abstract (assess last)	1. Key information ❑ 2. Balanced ❑ and informative ❑		
Text (assess last)	1. Sufficient detail others could reproduce ❑ 2. Clear/concise writing ❑, table(s) ❑, diagram(s) ❑, figure(s) ❑		
		Preliminaries [/5]	
2. Introduction			
Background	1. Summary of current knowledge ❑ 2. Specific problem(s) addressed ❑ and reason(s) for addressing ❑		
Objective	1. Primary objective(s), hypothesis(es), or aim(s) ❑ 2. Secondary question(s) ❑		
	Is it worth continuing?	**Introduction [/5]**	
3. Design			
Research design	1. Research design(s) chosen ❑ and why ❑ 2. Suitability of research design(s) ❑		
Intervention, Treatment, Exposure	1. Intervention(s)/treatment(s)/exposure(s) chosen ❑ and why ❑ 2. Precise details of the intervention(s)/treatment(s)/exposure(s) ❑ for each group ❑ 3. Intervention(s)/treatment(s)/exposure(s) valid ❑ and reliable ❑		
Outcome, Output, Predictor, Measure	1. Outcome(s)/output(s)/predictor(s)/measure(s) chosen ❑ and why ❑ 2. Clearly define outcome(s)/output(s)/predictor(s)/measure(s) ❑ 3. Outcome(s)/output(s)/predictor(s)/measure(s) valid ❑ and reliable ❑		
Bias, etc	1. Potential bias ❑, confounding variables ❑, effect modifiers ❑, interactions ❑ 2. Sequence generation ❑, group allocation ❑, group balance ❑, and by whom ❑ 3. Equivalent treatment of participants/cases/groups ❑		
	Is it worth continuing?	**Design [/5]**	
4. Sampling			
Sampling method	1. Sampling method(s) chosen ❑ and why ❑ 2. Suitability of sampling method ❑		
Sample size	1. Sample size ❑, how chosen ❑, and why ❑ 2. Suitability of sample size ❑		
Sampling protocol	1. Target/actual/sample population(s): description ❑ and suitability ❑ 2. Participants/cases/groups: inclusion ❑ and exclusion ❑ criteria 3. Recruitment of participants/cases/groups ❑		
	Is it worth continuing?	**Sampling [/5]**	
5. Data collection			
Collection method	1. Collection method(s) chosen ❑ and why ❑ 2. Suitability of collection method(s) ❑		
Collection protocol	1. Include date(s) ❑, location(s) ❑, setting(s) ❑, personnel ❑, materials ❑, processes ❑ 2. Method(s) to ensure/enhance quality of measurement/instrumentation ❑ 3. Manage non-participation ❑, withdrawal ❑, incomplete/lost data ❑		
	Is it worth continuing?	**Data collection [/5]**	
6. Ethical matters			
Participant ethics	1. Informed consent ❑, equity ❑ 2. Privacy ❑, confidentiality/anonymity ❑		
Researcher ethics	1. Ethical approval ❑, funding ❑, conflict(s) of interest ❑ 2. Subjectivities ❑, relationship(s) with participants/cases ❑		
	Is it worth continuing?	**Ethical matters [/5]**	
7. Results			
Analysis, Integration, Interpretation method	1. A.I.I. method(s) for primary outcome(s)/output(s)/predictor(s) chosen ❑ and why ❑ 2. Additional A.I.I. methods (e.g. subgroup analysis) chosen ❑ and why ❑ 3. Suitability of analysis/integration/interpretation method(s) ❑		
Essential analysis	1. Flow of participants/cases/groups through each stage of research ❑ 2. Demographic and other characteristics of participants/cases/groups ❑ 3. Analyse raw data ❑, response rate ❑, non-participation/withdrawal/incomplete/lost data ❑		
Outcome, Output, Predictor analysis	1. Summary of results ❑ and precision ❑ for each outcome/output/predictor/measure 2. Consideration of benefits/harms ❑, unexpected results ❑, problems/failures ❑ 3. Description of outlying data (e.g. diverse cases, adverse effects, minor themes) ❑		
		Results [/5]	
8. Discussion			
Interpretation	1. Interpretation of results in the context of current evidence ❑ and objectives ❑ 2. Draw inferences consistent with the strength of the data ❑ 3. Consideration of alternative explanations for observed results ❑ 4. Account for bias ❑, confounding/effect modifiers/interactions/imprecision ❑		
Generalisation	1. Consideration of overall practical usefulness of the study ❑ 2. Description of generalisability (external validity) of the study ❑		
Concluding remarks	1. Highlight study's particular strengths ❑ 2. Suggest steps that may improve future results (e.g. limitations) ❑ 3. Suggest further studies ❑		
		Discussion [/5]	
9. Total			
Total score	1. Add all scores for categories 1–8		
		Total [/40]	