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***Abstract**

Background: Health care outcomes used in service evaluation and research tend to measure morbidity and mortality. This is the case even in maternity care, where most women and babies are healthy. Salutogenesis theory recognises that health is a continuum, with explicit inclusion of wellbeing as well as illness and pathology. This offers the potential to reframe the outcomes and therefore, the focus of, maternity care research and provision.

Aim: The aim of this study was to identify how salutogenesis has been defined and used in maternity care research undertaken with healthy women.

Method: A scoping review was undertaken, using a formal pre-defined search strategy. Inclusion criteria encompassed research papers relating to the maternity episode up to one year after birth, using salutogenesis or any of its associated concepts, focused on healthy women, and written in a language which any of the members of the group could understand. The search was undertaken in two phases (Database inception-April 2011 and May 2011 -February 2013). Included studies were subject to narrative analysis.

Findings: Eight papers met the inclusion criteria. They covered seven topics, spanning the antenatal, intrapartum and postnatal periods. Only two papers employed both positive health orientation and explicit use of Antonovsky's theory. The remaining studies used discrete aspects of the theory.

Conclusion: Salutogenic framing is rarely used in maternity care research with healthy participants. An increase in research that measures salutogenically orientated outcomes could, eventually, provide a balance to the current over-emphasis on pathology in maternity care design and provision worldwide.

Keywords

Salutogenesis; maternity care; sense of coherence; literature review; COST Action.

Introduction

Outcomes that are used to assess the effects of health care provision and interventions tend to be measures of pathology, such as death, morbidity or disability [1]. This is despite the emphasis in the WHO Alma Alta declaration [2] and the Ottawa Charter [3] on the need to preserve and maximise health as a state of positive wellbeing (rather than one of mere absence of illness). The focus on adverse events to the exclusion of measures of health and wellbeing is occurring in parallel with an increasing tendency to classify some normal life events as potential sources of ill-health [4]. This is part of a process in which the term 'medicalisation' is increasingly used pejoratively to denote the overuse of routine technical and pharmacological interventions without scientific evidence of their benefits [4]. In some cases, these interventions increase the occurrence of unwanted outcomes. One such intervention is the use of admission cardiotocography for women in labour with no risk factors which has been proved to increase the risk of caesarean section [5].

The salutogenic approach to health care provision offers an alternative philosophy. Salutogenesis theory was introduced by the medical sociologist Aaron Antonovsky in the late 1970's and is concerned with understanding what generates and maintains a healthy outlook, even for those who are objectively exposed to illness or disability [6]. Salutogenesis interprets the state of health as a continuum, with complete (positive) health at one extreme and total absence of health at the other. Under the theory, the health state of individuals oscillates along this continuum throughout their lives. Antonovsky also described 'Generalized Resistance Resources' that can support wellbeing, even in the context of apparently adverse life events [6]. These include both internal resources (such as knowledge and attitudes) as well as external ones (such as social support and ease of access to services). The capacity to use these resources to maintain and improve health is termed the Sense of Coherence (SOC). Those with a

The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

strong SOC tend to feel that life is manageable, meaningful and comprehensible (no matter what the objective state of affairs is), and to perceive that they are healthy.

Antonovsky describes the key concepts of the Sense of Coherence as follows:

"[SoC is] a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (1) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable and explicable; [comprehensible], (2) the resources are available to one to meet the demands posed by these stimuli; [manageable], and (3) these demands are challenges, worthy of investment and engagement; [meaningful]." [7]

Salutogenesis theory has been widely used, in a range of languages, contexts, and cultures, in at least 49 countries [8]. However, there are some critics of the theory, who claim that the conceptualisation and interaction of the three central dimensions of comprehensibility, manageability and meaningfulness have not been fully explained. Research has not been conclusive in this regard. According to a seminal global systematic review on salutogenic research, all components should be treated as an entity [9]. Despite these limitations, the SOC has been proved to be a predictive indicator of health [10].

The application of salutogenesis theory to maternity care could help refocus the current paradigmatic norm of surveillance and risk aversion. Since the majority of women and babies are healthy at the outset of pregnancy, and throughout the maternity episode, the key task of maternity care should be to maintain or enhance this healthy state. Despite this, outcomes used for maternity care evaluation tend to be pathogenic, i.e. focusing on risk and adverse outcomes, similar to those used in states of illness [5]. It is therefore important to find a new way of understanding how to maintain health and wellbeing in the maternity care population, through the provision of care that minimises medicalisation and iatrogenic intervention, and that promotes and enhances positive

The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

states of health [11, 12, 13, 14, 15]. Given the potential for salutogenesis theory to achieve this aim, it is a relevant area to investigate. This study was undertaken as part of an EU-funded COST Action [16] designed to find out and to disseminate *what works, for whom and in what context* [17] in maternity care. As part of the work of the Action, the aim of this review was to identify how salutogenesis has been defined and used in maternity care research undertaken with healthy women.

Material and methods

Design

To achieve the research aim, a scoping review of the published literature was carried out using an iterative approach [18, 19]. Scoping reviews aim to obtain an overall picture of the available evidence on a particular field to guide future systematic reviews and further research. Scoping reviews focus on broad research questions where various different research designs have been applied [20]. The search was performed in two phases, first in January 2011, and then, due to the duration of the analysis process, in February 2013 to identify new research in the area, and to test the emerging synthesis.

Search strategy and identification of articles

The search was performed in Medline, Embase, HMIC, Maternity and Infant Care (via OVID), and CINAHL, AMED, PsychInfo, Medline with full text, Social Sciences Index (via EBSCO) and via www.salutogenesis.fi, a research database that integrates salutogenesis theory with health promotion research and practice. All databases were searched from inception to April 2011 (search 1), and reproduced in February 2013, adding a limit for results from April 2011 until February 2013 (search 2). Key words associated with

The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

salutogenesis were used (including Sense of Coherence, Meaningfulness, Comprehensibility and General Resistance Resources) combined with text words associated with the maternity episode (including maternity, midwife, obstetrician, neonate, paediatrician, pregnancy and labour). Back chaining techniques were employed by searching the reference lists of all the included papers and identifying those titles of articles that were potentially relevant to the review [21]. Abstracts and/or full texts of potentially relevant titles were obtained and appraised. World experts on salutogenesis in the Global Working Group on Salutogenesis (part of the International Union for Health Promotion and Education [IUHPE]) were consulted to identify any relevant unpublished or on-going studies. Full details of the search strategy are available from the authors.

Papers were included if they reported on research studies on healthy women (not described as diagnosed with a specific illness, disease or health problem) within the maternity episode, where the salutogenesis theory or any of its central concepts (such as SOC or GRR) were mentioned [6]. Papers written in a language which any of the members of the group could understand (English, Swedish, Norwegian, Finnish, German, French, Italian, Spanish and Portuguese) were also included. If a paper was written in a language in which only one or some members of the group were fluent, they translated the key elements of the paper for the rest of the group. The maternity episode was considered any event or circumstance occurring from conception, during the pregnancy, intrapartum or postnatal period up to one year following the birth of the baby. For this

The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

review, we considered that women included in the studies were healthy if the study didn't specify they suffered from a defined pathology. Papers were also excluded if they did not include care provision or events within the maternity episode, or if they were theoretical publications with no empirical data.

The first author read the titles of all the papers generated by both searches (2011 and 2013), and the abstracts for titles that appeared to meet the inclusion criteria. After exclusion of papers with non-eligible abstracts, all the authors read the remaining papers in full text, working in two independent groups (1: MPB and MB, 2: SD, BL and CM). Findings were then cross-checked for agreement. Final inclusion was then discussed among all the authors, and agreed by consensus. See Figure 1 for an overview of the selection process and Table 1 for exclusion reasons for each paper.

Data elicitation forms and quality check

Characteristics of all included papers were tabulated (see Table 2). As the review was focused on the use of salutogenic theory in research, and not on the findings of each research study per se, quality appraisal was focused on the way in which salutogenic theory was defined and used in each study. For this purpose, a quality criterion was devised. This comprised three elements: level of exploration of the salutogenesis theory, extent of explanation of the main concepts, and depth of exploration of benefits of applying the theory or its components to the maternity episode. Each criterion scored either 1 (fully), 2 (somewhat limited) or 3 (very limited). Each paper was then classified

The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

accordingly into 'full use', 'somewhat limited use' or 'very limited use' of the salutogenesis theory (see Table 3).

Analysis of included papers

We adopted a narrative approach to the analysis of the papers [22]. This approach involved a descriptive narrative account of the key characteristics of the included studies and the quality assessment findings (Tables 2 and 3). The analysis was organised by the phases of the maternity episode (antenatal, intrapartum, postnatal) and the degree to which the theory was applied in each study (i.e. whether there was full or only partial use of the theory).

Results of the searches

The first literature search performed in 2011 yielded a total of 6534 papers (after removing duplicates) from the search of the 3 electronic databases. In total, 6474 papers were excluded because they did not relate to the maternity episode. One could not be included because it was written in Czech. Abstracts for 59 studies were read. Of these, 33 papers proposed or utilised a mixture of different health promotion and public health approaches, philosophies and theories, including general well-being and resilience. However, salutogenesis or any of its components were not mentioned, and so they were excluded. Another paper was excluded as it studied women who took part more than one year after their baby was born. The remaining 25 full text papers were distributed, read and discussed by all the authors, resulting in exclusion of 19 more papers (Table 1). The remaining six papers were discussed in-depth among the

The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

authorship team. Two out of five of the authors were initially of the opinion that none of the papers merited analysis: they believed that salutogenesis theory had not been used to an acceptable degree of depth, to reflect the whole range of the underpinning concepts, and they feared that the studies would not be able to answer the research questions of the study. After debate, consensus was reached that it was important to at least describe the state of the art in this area, even (or especially) if this revealed shortfalls. Following agreement on this principle, the six papers remained for the analysis stage of the study [23, 24, 25, 26, 27, 28].

The second search performed in February 2013 yielded a total of five papers published between 2010 and 2013. Following the same review process, agreement was reached to include two of them [29, 30]. This provided a total of eight papers for analysis.

The included papers were published between 2002 and 2013, and comprised women from Germany, the USA, Netherlands, Denmark, Australia, Israel, UK and Sweden. The authors were based in university departments of development and education, health sciences, maternal health, psychology, social work and obstetrics and gynaecology.

Figure 1 to be placed around here

Tables 1, 2, and 3 to be placed around here

Results

Description of the salutogenesis theory or any of its main concepts in empirical research around the maternity episode

The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

There are wide variations among the included papers in the amount of detail given and how well they define and explore the main aspects of the theory.

A detailed exploration of the theory (i.e. full description of its main tenets, concepts and uses) is given only by 3 of the included studies [23, 24, 29]. Hellmer and Schuecking (2008) [24] use salutogenesis alongside other theories or tools which are the main focus of their results and conclusions sections. This results in very limited reporting on SOC findings. Their conclusions section does not include any reference to SOC or salutogenesis. Abrahamson and Ejlerthsson [23] and Thomson and Dykes [29] on the other hand, make a comprehensive and explicit use of salutogenesis as a theory for the development of their work, exploring the benefits of applying the theory and its components to the maternity episode and providing practical examples of how salutogenesis might improve maternity care provision.

The use of the salutogenesis theory and the context in which it has been used in empirical research around the maternity episode

Salutogenesis, and, specifically, the SOC questionnaire, is used with five main purposes (see Table 2): 1) To predict correlations between SOC and a variable of interest. According to three of the included studies women with a higher SOC tend to have better outcomes [25, 26, 30]. 2) To explore relationships between childbearing women's SOC and well-being levels; two studies show a positive correlation between levels of SOC and levels of well-being [24, 27]. 3) To understand the impact that factors or events occurring in maternity care contexts could have in the overall SOC score; one study

The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

shows that positive events in life can increase SOC levels; [28] 4) To understand how salutogenesis and levels of SOC can influence positive outcomes, such as achieving smoking cessation [23]. 5) To conceptualise women's experiences: one study uses the theory to conceptualise women's experiences of breastfeeding [29]. The eight papers address seven main phenomena across the maternity continuum (Table 2).

Pregnancy focus: One of the eight papers [23], applies the salutogenesis theory to the study of a particular aspect of pregnancy. Abrahamsson and Ejlertsson [23] investigate the mediating effect that the theory could have in helping achieve positive pregnancy outcomes (specifically in relation to smoking cessation).

Intrapartum focus: Helmers and Schuecking [24] investigate what type of birth first time mothers prefer (vaginal birth versus birth by caesarean section) and how this relates to well-being and levels of SOC. Oz et al. [26] study whether SOC levels had any predicting properties over uncomplicated births. Jeschke et al. [30] investigate the correlation between SOC level, preference for epidural use in the antenatal period and actual use of this type of analgesia in labour.

Postnatal focus: Three papers focus on postnatal events. Engelhard et al. [25] report the relationship between SOC in early pregnancy and the role it plays in seeking crisis support after pregnancy loss. Habroe and Schmidt [28] examine the effect that having a child after fertility treatment had on SOC levels. This is the only study which investigates

The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

a causal effect of a phenomenon (childbirth after fertility treatment) on final SOC levels.

The study by Thomson and Dykes [29] uses the SOC theory and salutogenesis philosophy to conceptualise new mothers' feelings, experiences, opinions and perceptions around infant feeding.

Focus on childbearing as a continuum: One paper [27] studies women's perception of wellbeing during pregnancy, how it correlates to puerperium levels and its relationship to their SOC.

Application of the salutogenesis theory: The application the authors make of salutogenesis varies widely (see Table 4). Five papers [25, 26, 27, 28, 30] focus mainly on specific instruments (like SOC, or General Resistance Resources) as simple linear assessment tools, without engaging with the fundamental move towards the healthy end of the health continuum that Antonovsky proposed and on which the tools were predicated.

Furthermore, four papers use the theory in combination with other theories or measurement tools [24, 25, 26, 27], most of which are oriented towards the study of morbidity, illness or adverse events (such as the Beck Depression Inventory, Perceived Stress Scale, Crisis Support Scale, the Edinburgh Postnatal Depression Scale and the Hospital Anxiety and Depression scale). This is a common occurrence in studies on salutogenesis in other areas of health care [10] and raises a question about the philosophical norms adopted for these studies.

On the other hand, Abrahamson and Ejlerthsson [23] and Thomson and Dykes [29]

The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

explore the benefits of applying the theory and its components to the maternity episode. They seem to give a comprehensive description of the salutogenic theory by giving a full description of its background, main tenets and concepts as well as providing sufficient evidence of their understanding of how it might contribute to improving women's wellbeing. They respectively provide practical examples of how the theory can assist in smoking cessation and interpreting mother's experiences and decision making processes in infant feeding.

Table 4 to be included around here.

Discussion

Although salutogenic theory recognises the reality of pathology and illness, it is also concerned with what generates health and wellbeing. In acknowledging that human beings live along a health continuum, salutogenesis offers the potential to influence a shift away from a strong emphasis on risk aversion and medicalisation in maternity care, and towards a well-being focus for maternity care service design and delivery in the future.

However, based on the findings of this review, application of salutogenesis theory to studies of healthy women in empirical research in maternity care appears to be rare, and, in most cases, partial. There seems to be a tendency to utilise elements of the theory in isolation or against 'gold standard' outcomes measures that emphasise pathology (such as, the Beck Depression Inventory, Perceived Stress Scale, or Crisis

The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

Support Scale). This suggests that the fundamental philosophical stance operating in these studies is still largely risk and pathology focused, and it implies a need for a more complete integration of health orientation and the main concepts of the theory into empirical research in the future. Given the power of measurement to influence change in service delivery [31], the inclusion of more direct measures of positive health and wellbeing in maternity care research could constitute a kind of praxis as well as offering a more complete assessment of the impact of childbirth.

The results of those papers that prospectively measure SOC and outcome show support to this suggestion [25, 26, 30] as people with a good salutogenic capacity (strong SOC) tend to do better than people with a weak salutogenic capacity. This hypothesis is subject to testing in future well-designed prospective studies. Future studies might also use new instruments that have been developed to measure salutogenic capacity on a system level [10].

The generalizability of findings in this review are limited by the exclusion of studies that have applied salutogenic concepts to childbearing women who experience ill health. A clear demarcation between illness and health is difficult to establish and so it might be beneficial for subsequent research to adopt a more flexible inclusion criteria. This might help explain how individuals can still be placed on the health side of the continuum even in the context of objective pathology.

Exemplars of good use of the salutogenesis theory:

The studies by Abrahamson and Ejlertsson [23] and Thomson and Dykes [29] have

The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

demonstrated an exemplar use of the salutogenesis theory. They could help guide researchers in the successful application of the theory to their research. Both studies make a comprehensive application of salutogenesis, describing its background and main concepts fully and integrating them within a salutogenic standpoint to conduct their research and the measuring health outcomes. More importantly, they have shown sufficient understanding of how the theory might contribute to improve childbearing women's wellbeing. Abrahamson and Ejertsson [23] provide practical examples of how the theory can assist in smoking cessation showing very positive results. The authors also highlight other areas of practice where the application of the theory would be of potential benefit. Thomson and Dykes [29] use the theory to interpret mother's experiences and decision making processes in infant feeding, highlighting the benefit of using all the different components of the theory in the comprehensive understanding of those experiences (as opposed to using only isolated elements of the theory).

Conclusion

Salutogenesis theory is an emerging concept within public health and health care, with the power to turn the focus of health care towards the generation and maintenance of health instead of perpetuating the current paradigm which focuses on the prevention and treatment of ill-health. Wide-spread use of the salutogenesis theory is not currently evident within maternity care research relating to women on the healthy end of the health continuum. In most such studies, even when the theory is mentioned, only selected components are used. However, the two studies included in this review which use the theory and its main tenets more comprehensively [23, 29] showed

The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

positive outcomes in terms of the potential for the theory to understand what generates health and what helps to maintain it.

The synergy between health care, public health, health promotion and salutogenesis is an important theme for future research focused on the development of the full health potential of mother and child.

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The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

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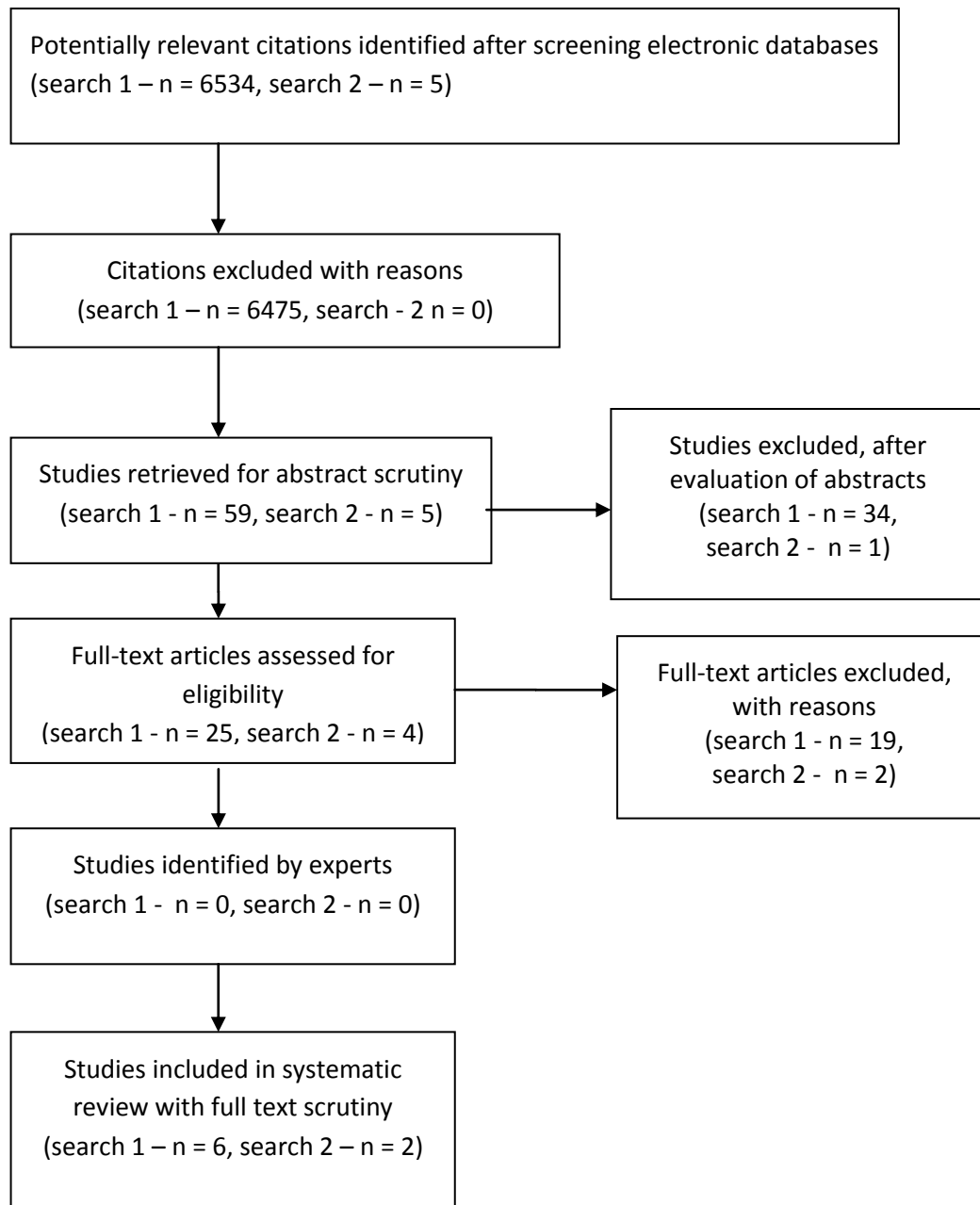
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The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

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Appendix - Tables and figures:

Figure 1. Flow diagram of study selection process



The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

Table 1. Final inclusion and exclusion of articles after full text review			
	Article	Included– Excluded	Reason for exclusion
[13]	Downe and McCourt (2008)	EXCLUDED	Theory paper
[14]	Downe (2010)	EXCLUDED	Theory paper
[32]	Cervantes et al. (1999)	EXCLUDED	Use of pathogenic framework
[33]	Bernosky de Flores (2010)	EXCLUDED	Use of pathogenic framework
[34]	Tham et al. (2008)	EXCLUDED	Use of pathogenic framework
[35]	Libera et al. (2007)	EXCLUDED	Use of pathogenic framework
[36]	Almedomet al. (2005)	EXCLUDED	Use of pathogenic framework
[37]	Larsson and Svalenius (2009)	EXCLUDED	Use of pathogenic framework
[38]	Larsson et al. (2009)	EXCLUDED	Use of pathogenic framework
[39]	Hildingsson et al. (2008)	EXCLUDED	Use of pathogenic framework
[40]	Ekelin et al.(2008)	EXCLUDED	Use of pathogenic framework
[41]	Hallgren and Kihlgren (1995)	EXCLUDED	Use of pathogenic framework
[42]	Stramrood et al. (2011)	EXCLUDED	Use of pathogenic framework
[43]	Lee et al. (2007)	EXCLUDED	Written in a language not spoken by any of the authors
[44]	Johansson et al. (2009)	EXCLUDED	Outside of maternity timeframe (up to 1 yr post childbirth)
[45]	Uren and Wastell (2002)	EXCLUDED	Outside of maternity timeframe (up to 1 yr post childbirth)
[46]	Tedgrad et al. (1999)	EXCLUDED	Outside of maternity timeframe (up to 1 yr post childbirth)
[47]	Darra (2009)	EXCLUDED	Theory paper
[48]	Dickerson (2004)	EXCLUDED	Theory paper
[23]	Abrahamsson and Ejlertsson (2002)	INCLUDED	
[24]	Hellmers and Schuecking (2008)	INCLUDED	
[25]	Engelhard et al. (2003)	INCLUDED	

The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

[26]	Oz et al. (2009)	INCLUDED	
[27]	Sjostrom et al. (2004)	INCLUDED	
[28]	Habro and Schmidt (2007)	INCLUDED	
[49]	Sinclair M, Stockdale J. (2011)	EXCLUDED	Theory paper
[50]	Ventegodt et al. (2011)	EXCLUDED	Theory paper
[51]	Fei-Wan and Siew-Fei (2011)	EXCLUDED	Aims of study were exclusively to translate the SOC-family tool, not make empirical use of it.
[29]	Thomson and Dykes (2011)	INCLUDED	
[30]	Jeschke et al. (2012).	INCLUDED	

The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

Table 2. Characteristics of primary empirical research studies

Article	Sample size	Sample type	Location	Study design	Theory	Aims	Purpose of using theory and/or SOC	Phenomenon at study
Hellmers and Schuecking (2008) [24]	342 32	Healthy low-risk primagravidae with singleton pregnancies	Germany and USA	Multicentre, multinational, prospective cohort study with two phases	Not identified explicitly but focus on well-being and salutogenesis	Evaluate preference of mode of birth and how this relates to maternal well-being and SOC. Describe relationship between mode of birth and well-being	Explore relationships between SOC and well-being	Mode of birth
Sjostrom et al. (2004) [27]	120	Low risk pregnant women, Swedish speakers	Sweden	Multicentre, prospective follow-up study	Well-being Sense of Coherence	Describe perception of wellbeing during pregnancy and after delivery and explore its relationship to their SOC	Explore relationships between SOC and wellbeing	Pregnancy
Engelhard, Van Den Hout and Vlaeyen (2003) [25]	117	Women with a pregnancy loss	Netherlands	Prospective study with repeated measurements	Sense of coherence	Study relationships between SOC, PTSD symptoms after pregnancy loss. Study crisis support as a mediator between SOC and PTSD symptoms.	Predict relationships between SOC and a variable of interest	Bereavement/postnatal
Abrahamsson and Ejlertsson (2002) [23]	337	Smoking pregnant women	Sweden	Prospective quantitative study	Salutogenesis	Use empirical data to assess the theoretical relevance of using a salutogenic perspective to prevent smoking during pregnancy	Predict relationships: identify if SOC acts as a mediator in achieving positive outcomes	Pregnancy
Oz et al. (2009) [26]	145	Pregnant women, ≥ 18 years, fluent Hebrew speaker, singleton	Israel	Prospective observational study	Sense of Coherence	Investigate whether a SOC & perceived stress can predict uncomplicated deliveries	Predict relationships between SOC and a variable of interest	Mode of birth

The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

		pregnancy, vertex						
Habroe and Schmidt (2007) [28]	1934	Couples undergoing IVF treatment	Denmark	Multicentre, prospective cohort study.	Sense of Coherence	Investigate whether childbirth after assisted reproductive technology (ART) results in high SOC. Investigate whether baseline SOC influences the association between childbirth after ART and SOC at 1 yr follow-up	Inverse prediction – effect of events on final SOC levels	Impact of motherhood (after fertility treatment) on SOC
Jeschke et al. (2012) [30]	193	Women on a maternity ward of a general hospital with a specialisation in integrative medicine	Germany	Prospective observational study	Salutogenesis Sense of Coherence	Identify predictors associated with the use of epidural analgesia (EA).	Predict relationships between SOC and a variable of interest	Use of epidural analgesia
Thomson and Dykes (2011) [29]	15	Women who had had a baby in the last 12 months and were being cared for in area where BFI evaluation was taking place.	UK	Semi structured interviews	Salutogenesis, Sense of Coherence	To explore women's opinions, perceptions, attitudes and experiences of women in relation to infant feeding	Conceptualise women's experiences of infant feeding	Infant feeding experiences.

Table 3. Quality assessment of articles in relation to the use they make of the salutogenesis theory

Article	Exploration of the salutogenesis theory	Explanation of main concepts	Exploration of benefits of applying the theory or its components to maternity care contexts	Used as a main theory, alongside another theory/tool or as a secondary theory	Overall quality score on the use of salutogenesis
Hellmers and Schuecking (2008) [24]	F	F	F	A	SL
Sjostrom et al. (2004) [27]	VL	SL	SL	A	SL
Engelhard et al. (2003) [25]	VL	SOC = F, REST = VL	F	A	SL
Abrahamsson and Ejlertsson (2002) [23]	F	F	F	M	F
Oz et al. (2009) [26]	SL	SL	F	A	SL
Habroe and Schmidt (2007) [28]	VL	F	F	M	SL
Jeschke et al. (2012) [30]	SL	SL	SL	M	SL
Thomson and Dykes (2011) [29]	F	F	F	M	F
F: Fully / in-depth SL: Somewhat limited / lacking depth VL: Very limited M: Main theory A: Alongside another theory in the study the same phenomenon					

The use of salutogenesis theory in empirical studies of maternity care for healthy mothers and babies. Perez-Botella, M., Downe, M., Meier-Magistretti, C., Lindstrom, B. and Berg, M. (2014)

Table 4. Use of salutogenesis and / or its different components

Article	Use of Salutogenesis theory	SOC	Meaningfulness	Comprehensibility	Manageability	GRR
HellmersandSchuecking (2008) [24]	X	✓	X	X	X	X
Sjostrom et al. (2004) [27]	X	✓	X	X	X	X
Engelhard et al. (2003) [25]	X	✓	X	X	X	✓
AbrahamssonandEjlertsson (2002) [23]	✓	✓	✓	✓	✓	✓
Oz et al. (2009) [26]	X	✓	X	X	X	X
Habroeand Schmidt (2007) [28]	X	✓	✓	X	X	X
Jeschke et al. (2012) [30]	X	✓	✓	✓	✓	X
Thomson and Dykes (2011) [29]	✓	✓	✓	✓	✓	✓

SOC: Sense Of Coherence

GRR: General Resistance Resources

X: did not use/explain this element of the theory

✓: made good use/gave a good explanation of this element of the theory