

CONCEPT ANALYSIS

Concealed pregnancy: a concept analysis

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Abstract

Aim/Design. A concept analysis of concealed pregnancy was undertaken using Walker and Avant's framework to examine the attributes, characteristics and uses of the concept in maternity care.

Background. Understanding the concept of concealed pregnancy is critical as failing to do so adds the risk of maternal and neonatal morbidity and mortality. Reviewing the literature and selected empirical referents indicated that concealed pregnancy has been predominantly viewed through a biomedical lens. Confusion exists around the definitions of denied and concealed pregnancy.

Data sources. A systematic search of five bibliographic databases using keywords from the years 1960–2014.

Methods. Walker and Avant's framework was used to guide the concept analysis. A thematic analysis of reviewed papers identified the main characteristics of concealed pregnancy.

Results. Concealed pregnancy was conceptualized as a process and the critical attributes are secrecy, hiding, daytime story, staying away and avoidance. This process involves avoidance and if this includes failing to access healthcare can lead to catastrophic outcomes such as maternal and neonatal death. Antecedents, attributes and consequences of concealed pregnancy are also identified.

Conclusions. Understanding the concept of concealed pregnancy and its antecedents, attributes and consequences may assist in risk identification of women who conceal a pregnancy. This concept analysis has identified a need for further exploration of the coping styles and psychosocial processes involved in women concealing and revealing a pregnancy.

Keywords: concealed pregnancy, concept analysis, denied pregnancy, midwives, neonaticide, nurses

Introduction

Pregnancy may not always be a welcome experience and it may represent a crisis for women who perceive it as a

stressor. Concealed pregnancy is a phenomenon where a woman hides and keeps her pregnancy secret (Bonnet 1993, Hatters Friedman *et al.* 2007, Wessel *et al.* 2007 p. 117) and has no universal definition (Sadler 2002). The literature published in relation to the concept of concealed pregnancy has identified ambiguity around the definition. A multitude

Why is this research needed?

- Concealed pregnancy has major implications for women, babies and society and is under-researched.
- Concealed pregnancy is confused with the term denied pregnancy.
- Concealed pregnancy often leads to inadequate antenatal care which can result in maternal or neonatal morbidity and mortality.

What are the key findings?

- Secrecy, hiding, daytime story, staying away from family and social network and avoidance are critical attributes of concealed pregnancy.
- Women may conceal a pregnancy for varying degrees of time and recurrence in subsequent pregnancies may feature.
- Women concealing a pregnancy cope by avoidance.

How should the findings be used to inform policy/practice/education?

- Understanding concealed pregnancy should inform policy makers in developing crisis pregnancy services and care pathways for women.
- Nurses and midwives should be aware of the association between concealed pregnancy and neonaticide. Implications for child protection exist in some cases of concealed pregnancy.
- Understanding the attributes of concealed pregnancy may assist in risk identification of women who conceal a pregnancy.
- Future research should take into account individual coping styles.

of terms have been used such as concealed, denied, disavowal, negated, cryptic, rejected and secret pregnancy. This conceptual confusion has hindered understanding the process. Some authors have attempted to differentiate the concepts of concealed from denied pregnancy (Beier *et al.* 2006, Friedman & Resnick 2009). In some studies, the definitions are used interchangeably (Milstein & Milstein 1983, Spielvogel & Hohener 1995, Maldonado-Duran *et al.* 2000, Neifert & Bourgeois 2000, Sadler 2002, Wessel *et al.* 2003, Conlon 2006) but they are two distinct concepts. Denial is a statement that something is not true e.g. I am not pregnant, while concealing is an active means of coping by keeping something hidden or secret. Vellut *et al.* (2012) recommended a rethinking of the terms presently used.

Concealed pregnancy has serious implications for mothers and infants, may lead to maternal and neonatal morbidity and mortality and is a public health issue

(Conlon 2006). The ramifications for maternal health include delayed or absence of antenatal care, psychological distress and childbirth complications e.g. postpartum haemorrhage and maternal death (Brezinka *et al.* 1994, Sadler 2002, Conlon 2006, Ali & Paddick 2009). Implications for infants include delay in detection of foetal anomalies amenable to treatment, risk of prematurity, low birth weight, malpresentations, birth injuries, abandonment and even death (Conlon 2006, Ali & Paddick 2009, Mueller & Sherr 2009).

Society has conceptualized concealed pregnancy from a biomedical perspective and women affected may be viewed as having a psychiatric disorder. Jenkins *et al.* (2011) has stated that concealed pregnancy should be viewed as a 'red flag' and trigger psychiatric assessment including assessment of maternal capacity. To date, a mechanism to identify women at risk of concealing their pregnancies has not been found.

Concealed pregnancy as a social issue came to public prominence in Ireland in 1984 following the tragic death of a 15-year-old schoolgirl Ann Lovett and her baby in a grotto following an unassisted birth (O'Reilly 2003). Concealed pregnancy re-emerged months later when two cases of infanticide known as the Kerry Babies Case became the source of a State Tribunal of Inquiry (Inglis 2003). These tragic cases illustrate the stark consequences of concealed pregnancy. More recently concealed pregnancy and its' significance was highlighted in the USA following the death of a 19-year-old university student and her newborn baby (CNN 2013) and in Australia following the abandonment of a newborn baby in a drain (BBC 2014a). Cases of newborn babies born in toilets following concealed pregnancies with tragic outcomes have been reported (Austrian Times 2014, Riegel 2014, Sydney Morning Herald 2008). A recent Serious Case Review into the death of baby Callum Wilson has raised questions about the significance of concealed pregnancy in this case (BBC 2014b) and its' impact on maternal-infant attachment. Baby Callum's mother concealed her pregnancy and he was initially placed in foster care. Later Callum was returned to his mother, but the Review identified his mother had told people that he was not her child (Ibbetson 2014). Concealed pregnancy is an international and contemporary problem and an antecedent to complicated attachment, abandonment and neonaticide (Murphy Tighe & Lalor 2015a).

Background

Women who conceal their pregnancies are not a homogeneous group and come from all social classes, irrespective of age, educational or marital status (Hatters Friedman *et al.*

2007, Wessel *et al.* 2007) with no clear typology (Chen *et al.* 2007). Societal perception that only teenagers conceal their pregnancies is a fallacy. Women who conceal their pregnancies experience complex psychological distress (Conlon 2006, Thynne *et al.* 2006), fear, stigma and isolation (Mahon *et al.* 1998, Conlon 2006, Thynne *et al.* 2012). Thynne *et al.* (2012) found that recurrence of concealed pregnancy was a feature in seven of nine women in their study. Concealed pregnancy continues to occur among a wide profile of women for many reasons. Women who conceal a pregnancy include those who experience domestic violence, rape and incest (Spielvogel & Hohener 1995, Hatters Friedman *et al.* 2007, Porter & Gavin 2010).

Confidential Enquiries into Maternal Deaths (Lewis 2007) and Serious Case Reviews of infant deaths in the UK have highlighted that concealed pregnancy has an impact on maternal and infant outcomes. Missed opportunities such as identifying the importance of concealed pregnancy have been noted in other Serious Case Reviews (Reder & Duncan 1999, Earl *et al.* 2000, Department of Health 2002). Internationally high profile cases of neonaticide in Europe, USA and Australia have raised concerns about concealed pregnancy and child protection (Porter & Gavin 2010, De Bortoli *et al.* 2013).

The literature identifies that concealed pregnancy is associated with neonaticide (D'Orban 1979, Saunders 1989, Vallone & Hoffman 2003, Riley 2005, Putkonen *et al.* 2007, Beyer *et al.* 2008, Habek 2010, Porter & Gavin 2010, Amon *et al.* 2012, Vellut *et al.* 2012, De Bortoli *et al.* 2013) and abandonment (Drescher-Burke *et al.* 2004, University of Nottingham 2012). Riley (2005) in an American study of nine women incarcerated for neonaticide found that all concealed their pregnancies. Research into neonaticide found psychopathology was rare (Hatters Friedman *et al.* 2009, Porter & Gavin 2010, Vellut *et al.* 2012). It is assumed that during pregnancy, women feel a connectedness to the foetus; however, this is not always true (Kumar & Robson 1984). Unintended pregnancies may impact on maternal-foetal attachment and increase the risk of abuse (Zimmerman & Doan 2003) or provoke ambivalent and conflicted feelings towards the infant (Kumar & Robson 1984). A study of 16 cases of neonaticide found that the mothers were motivated by personal, social or economic reasons (Putkonen *et al.* 2007). Beyer *et al.* (2008) found in an analysis of neonaticide carried out by the FBI that in 83% of 40 cases, another was aware of the pregnancy. Scant attention has been paid to concealed pregnancy and its impact on the developmental trajectory of infants and mothers (Murphy Tighe & Lalor 2014).

The reasons for concealed pregnancy are many, including the social unacceptability of premarital/extramarital pregnancy and are found in conservative and liberal societies. Contemporary accounts of collusion between family and friends to conceal a pregnancy exist (Conlon 2006). Two Irish studies included women ranging from 16-44 years, the majority were 17-19-years old (Conlon 2006, Thynne *et al.* 2012). Common themes included the implications of concealed pregnancy and the influence of family/society on the woman during pregnancy. Fear of parental reaction (Thynne *et al.* 2012) and stigma of pregnancy before marriage (Conlon 2006) were found as reasons for concealed pregnancy. In the literature searched, no concept analysis or theoretical framework to guide practitioners dealing with concealed pregnancies was found.

Use of the concept

According to the Oxford English Dictionary (2013a,b), the term 'conceal' is derived from the Latin word 'concelare', 'con' meaning completely and 'celare' meaning to hide. The purpose of this concept analysis is to provide a definition of concealed pregnancy that contributes to understanding its use. Dictionary definitions of concealed pregnancy were reviewed. The Collins English Dictionary (2013) defines the verb 'conceal' as 1. 'keep secret', 2. 'not allow to be seen' and 3. 'hide'. The meanings of the word concealment indicate its significance and implies a conscious decision to withhold knowledge or cloak and mask information. Synonyms of conceal include to hide, bury, disguise, cover, obscure, camouflage or veil. Concealment, the noun is 'the action of hiding something or preventing it from being known' (Oxford English Dictionary 2013a,b).

To distinguish concealed from denied pregnancy a dictionary definition of denial was reviewed. Denial is the 'act or an instance of denying', 'refusal of a request or wish', 'a statement that a thing is not true', 'a rejection', 'subconscious suppression of an unacceptable truth or emotion' (Oxford English Dictionary 2013a,b). This is not the same as concealed pregnancy where there is an awareness of pregnancy that is kept hidden and secret. This highlights the fundamental differences between both concepts. Denial has been described as an unconscious defence mechanism used to resolve emotional conflict, meaning a lack of awareness exists (Werner *et al.* 1980), while concealment is viewed as a conscious act (Thynne *et al.* 2006) which involves hiding and keeping a pregnancy secret.

Psychological and sociological descriptions of concealment exist. Individuals sometimes withhold sensitive information

about themselves and this behaviour may lead to poor health outcomes e.g. isolation and depression (Niederhoffer & Pennerbaker 2009). Concealing sexual orientation, domestic violence, unemployment or addiction can lead to social strain, isolation and distress. In romantic relationships individuals sometimes conceal feelings (Richards *et al.* 2003). Concealing a condition may be due to a fear of being exposed to judgement or rejection.

Method

Concept analysis is a rigorous process by which an abstract is explored, clarified and differentiated from similar concepts to inform theory development (Walker & Avant 2011). Walker and Avant's (2011) eight step method was selected as a deductive method to distinguish between the defining attributes of concealed and denied pregnancy:

- The selection of a concept
- The determination of the analysis purpose
- The identification of all possible uses of the concept
- The creation of the defining attributes
- The identification of a model case of the concept
- The identification of borderline, related and contrary
- The identification of antecedents and consequences
- The definition of empirical referents (Walker & Avant 2011)

The terms 'concealed pregnancy', 'concealment of pregnancy', 'denial of pregnancy', 'denied pregnancy' and 'neonaticide' were searched using CINAHL, Google Scholar, PubMed, PsycINFO and PsycARTICLES electronic databases. Applicable content such as discussed meaning and consequences from English language sources with publication dates ranging from 1960–2014 were included in the analysis. Duplications and papers extraneous to the concept were excluded. The grey literature was searched using Google, Index to Thesis, Dissertations Abstracts International and a hand search was also performed. One case study report, eight books and two doctoral theses were also reviewed. The literature related to concealed pregnancy is limited. The reference list of all identified papers and reports were hand searched for additional sources. One hundred and sixty-five references were reviewed for relevance. After removing duplicates, 128 papers were considered. Articles that referred to infanticide rather than neonaticide were excluded. The final dataset of 56 papers were analysed using the Walker and Avant (2011) framework to develop a theoretical definition, defining attributes, antecedents, consequences and related concepts.

Results

Walker and Avant (2011) define the term 'attributes' as those characteristics that must always be present if the concept exists. The identification of critical attributes, antecedents and consequences (Table 1) of the concept was undertaken.

Attributes of concealed pregnancy

There are five key attributes of concealed pregnancy: Secrecy, Hiding, Daytime story, Staying away and Avoidance. The first attribute identified was secrecy. Women who conceal their pregnancies keep it secret from their social network and some do not access health care. Women may conceal their pregnancy for many months, up to or after childbirth (Conlon 2006, Thynne *et al.* 2006) which may involve telling no one to telling a friend or family member. Secrecy enables women to manage a distressing experience and has temporal dimensions. Secrecy can be a strategic decision (Kumar *et al.* 2009) in cases where women plan to place their baby for adoption (Treacy & Byrne 2003, Kelly 2005, Hatters Friedman *et al.* 2007). Cases of concealed pregnancy following rape, violence and incest (Spielvogel & Hohener 1995, Hatters Friedman *et al.* 2007, Porter & Gavin 2010) and among women with intellectual disabili-

Table 1 Antecedents, attributes and consequences of concealed pregnancy.

Antecedents	Attributes	Consequences
<ul style="list-style-type: none"> • Aware of pregnancy • Fear (of others or for others) • Compares own situation to societal norms & expectations • Context-relationship/finances/culture/religiosity • Perceives a lack of support or mechanism to mother infant 	(Internally or externally mediated) <ul style="list-style-type: none"> • Secrecy • Hiding • Daytime story (cover story) • Staying away • Avoidance 	Woman <ul style="list-style-type: none"> • Maternal death • Self harm/suicide • Mothering/Termination of pregnancy: forced or voluntary • Recurrence Infant <ul style="list-style-type: none"> • Neonatal death • Abandonment/Neonaticide • Fostering/Adoption Society <ul style="list-style-type: none"> • Increased child surveillance • Anonymous birthing • Baby Hatches

ties are recorded (Jenkins *et al.* 2011, Limerick Leader 2014). A need for protection is required for some women. Some women keep a pregnancy secret because they fear losing an infant to social services (Nirmal *et al.* 2006) or to exclude others from their decision-making regarding the outcome of the pregnancy (Farber 1990, Namerow *et al.* 1993). Revealing a concealed pregnancy is very stressful and traumatic for the woman.

The second attribute of concealed pregnancy is hiding. The elaborate extent to which women go to hide a pregnancy includes wearing loose or restrictive clothing, distracting attention and continuing to drink/smoke to give an appearance of normalcy (Conlon 2006, Thynne 2006). Women who conceal their pregnancies may tell untruths to hide the pregnancy. Some women have concerns for their safety or future (Ali & Paddick 2009). Some women resort to wearing tight corsets or bandages to hide the pregnancy.

The third key attribute is the daytime story. Rational, plausible explanations are given to cover up and explain symptoms or detract attention (Ali & Paddick 2009). Examples of the daytime story include glandular fever, ovarian cysts, tumours, menopausal symptoms and weight gain. Women describe being locked into concealment and unable to reveal the pregnancy (Thynne 2006). Fear of parental reaction, difficult relationships and a desire to protect parents are reasons given for concealed pregnancy (Conlon 2006, Thynne 2006) and using a cover story.

The fourth attribute is staying away. Isolating oneself from others is observed in concealed pregnancy. The reasons for 'late booking' in some cases may include concealed pregnancy (Hatters Friedman *et al.* 2009). Late booking involves attending for antenatal care at an advanced stage of pregnancy and is a factor in some maternal deaths (Lewis 2007). Staying away historically involved women living in mother and baby homes (Milotte 1997) or supported accommodation. Women may move home to keep up the pretence, citing occupational or educational opportunities elsewhere. Staying away can impact women's access to counselling or antenatal care. Limiting contact with family, friends or moving home by staying away is an isolating experience.

The final attribute is avoidance which is a behavioural manifestation of emotional-focused coping. Avoidance as a psychological behaviour is described in Lazarus and Folkman (1984) seminal work on stress, appraisal and coping. Women who conceal a pregnancy report awareness of pregnancy yet avoiding pregnancy tests, not looking at their pregnant abdomen, not accessing antenatal care or not acknowledging foetal movements. These women avoid revealing the pregnancy and levels of avoidance are seen.

Avoidance is an active means of coping characterized by the effort to avoid dealing with a stressor. A pregnancy may be partially concealed for some months or completely concealed until or after birth. The coping efforts of women who conceal their pregnancies warrants attention (Brezinka *et al.* 1994) as behaviours seen such as hiding, staying away, secrecy and avoidance pose a real challenge.

Antecedents

Antecedents are events that must occur before a pregnancy is concealed. The antecedents of concealed pregnancy are Awareness of Pregnancy, Fear (of others or for others), Compares own situation to societal norms & expectations, Context –relationships/finances/culture/religiosity and Perceives a lack of support or mechanism to mother infant.

Awareness of pregnancy is an antecedent. Women who concealed pregnancies have spoken about knowing they were pregnant, deciding not to reveal it as telling someone would confirm the pregnancy or impact their decision-making. One woman in our study of concealed pregnancy said 'to this day the official story I still tell my family was that I did not know I was pregnant'. This woman was aware of her pregnancy and described avoiding health care until the third trimester. She told her partner about the pregnancy following an ultrasound at 33 weeks gestation.

An important antecedent of concealed pregnancy is fear. Fear (of others or for others) is observed in historical and contemporary accounts of concealed pregnancy (Conlon 2006, Thynne 2006, Farrell 2012, Rattigan 2012). Fear can impact on decision-making and O'Reilly (2009) recommended that people remain supportive yet non-directive in their approach to an unintended pregnancy. Thynne *et al.* (2012) reported that fear of family reaction to a pregnancy was a reality for women of various ages. Women may find it difficult to reveal due to fear of rejection or judgement which culminates in avoidance of professionals or seeking support.

Another antecedent is that women may compare their own situation to societal norms and expectations. Women concealing a pregnancy may find themselves in unconventional circumstances compared with others. The context where a woman becomes pregnant is another antecedent as culture, relationships, finances or religiosity can impact lives significantly. The majority of religious faiths expect pregnancy to follow marriage. Cultural expectations can place significant pressure on women. Family honour or 'izzat' has been found to be a factor in the UK among Asian babies relinquished for adoption (Selwyn *et al.* 2008) and some mothers expressed fear for their lives. Complex situations

involving illness, bereavement and relationships are part of the social context of concealed pregnancy (Conlon 2006, Thynne 2006). A lack of resources e.g. finances or housing is a major challenge for women when dealing with a concealed pregnancy.

The final antecedent is where a woman perceives a lack of support/ mechanism to mother her infant. An advancing pregnancy and stressful circumstances may exacerbate pressure on a woman's coping response. Issues of coercion have been discussed in adoption research as women were sometimes forced to 'relinquish' their child by social and family pressures (Howe *et al.* 1992, Wells 1994, Kelly 2005) and these women often concealed their pregnancies. Parenting or adoption may be planned by the woman (Kelly 2005, Aloï 2009) or in some cases no plan exists. Women may also be forced to opt for termination of pregnancy by others or by life circumstances (Coleman 2006) and hide their pregnancy in the preceding months. The reactions of significant others is very important in the concealed pregnancy process.

Consequences

Consequences for a woman who has concealed a pregnancy include maternal death, mothering/termination of pregnancy (forced or voluntary), suicide/self harm and recurrence of concealed pregnancy. Consequences for the infant include neonatal death, neonaticide/newborn abandonment (Vellut *et al.* 2012, Putkonen *et al.* 2007), fostering or adoption (Marshall 2012) and mothering. On a societal level consequences include increased child surveillance, anonymous birthing (Villeneuve-Gokalp & Jacob 2011) and Baby Hatches (Bartels 2012, Asai & Ishimoto 2013). Baby hatches are boxes or incubators provided for the legal abandonment of babies in many countries which are also called baby boxes or angels cradles. Women in our research have spoken about wanting control over the outcome of the pregnancy and did not want to be 'forced' to mother their child or 'forced' into adoption (Murphy Tighe & Lalor 2015a). Recurrence of concealed pregnancy is reported (Thynne *et al.* 2012).

Define the empirical referents

To complete the concept analysis it was necessary to identify the empirical referents and measures for defining the attributes of the concept. Several papers report the prevalence rates of concealed pregnancy (Wessel *et al.* 2007, Hatters Friedman *et al.* 2007, Nirmal *et al.* 2006). Antecedents identified in this analysis (Awareness of pregnancy, Fear and Context) and attributes (Secrecy and Avoidance) are concepts worth pursuing in future research. Inter-disci-

plinary research is imperative and will assist in developing an understanding of the processes involved.

Discussion

Theoretical definition

Concealed pregnancy is a complex, multidimensional and temporal process where a woman is aware of her pregnancy and copes by keeping it secret and hidden. Behaviours such as avoidance, hiding, using a daytime story, staying away and secrecy are key characteristics. Fear (of others or for others) is central to the process and an interaction with another antecedent e.g. context/culture or a perceived lack of support to mother her infant leads to concealing a pregnancy. It is a difficult and traumatic experience for the woman. Variations in the duration of concealed pregnancy exist and recurrence may feature in this process.

Walker and Avant (2011) indicated the merit of constructing a model case which demonstrates all the defining attributes of the case. In concealed pregnancy, we suggest that there are four variations of the model case (Table 2). The distinguishing antecedent is fear (of others or for others). An interaction between fear and another antecedent e.g. the context where pregnancy occurs, leads to concealing a pregnancy. The fear (of others or for others) is significant and if it is extreme, the woman may be prepared to risk her life and that of her infant. If her pregnancy is discovered by another it is revealed because that person refuses to keep it secret and at a minimum, informs and involves healthcare professionals. In type 1, the fear is so intense that women are prepared to risk their own and their infants' lives. In type 2, the fear is as intense but these women may be found out by another or found birthing alone. This individual keeps the secret and abandonment or neonaticide may result. In type 3 the woman reveals the pregnancy to significant others very late in pregnancy due to the fear of death and they may involve healthcare professionals at a minimum. Assistance becoming available means the woman cannot abandon her infant. This woman is 'unlikely to mother' her infant. In type 4 the fear of maternal or infant death is the tipping point where a woman seeks assistance from others. An example of the first variation in the model case is given which is an extreme case of concealed pregnancy and highlights the tragic consequences that can ensue if a pregnancy is not revealed:

Christine MacDonald, a 36-year-old office manager never revealed her pregnancy (secrecy) to anyone, she gave birth alone (staying

Table 2 Model, borderline, related & contrary cases of concealed pregnancy.

Four variations	
Model case	
Type 1.	<ul style="list-style-type: none"> • Woman conceals pregnancy completely until birth due to fear. • She gives birth alone. • The level of fear is so great she risks her own life and that of her infant. • Woman and/or infant may die or newborn abandoned or neonaticide may result.
Type 2.	<ul style="list-style-type: none"> • Woman conceals pregnancy completely until birth due to fear. • She gets found out during or close to birth. • The significant other complies in keeping the secret and concealment continues. • This type may result in newborn abandonment/neonaticide.
Type 3.	<ul style="list-style-type: none"> • Woman conceals her pregnancy but reveals to others late in pregnancy/close to birth • Significant others become involved in keeping the pregnancy secret • Assistance becoming available means the woman cannot abandon her infant. This woman is <i>unlikely to mother</i> her infant.
Type 4.	<ul style="list-style-type: none"> • Woman only reveals to healthcare professionals as the <i>fear</i> of death is so great she will not risk death. • The potential to mother her infant is decreased if the secrecy continues and may result in fostering or adoption.
Borderline case	
Type 1	<ul style="list-style-type: none"> • Woman conceals her pregnancy partially. • She does disclose to a health or social care professional and/or significant other. • The choice is the woman's and it is within the woman's control whether she mothers her infant or not.
Type 2	<ul style="list-style-type: none"> • Woman conceals her pregnancy as her relationship is characterised by <i>intimate partner violence</i>. • The fear this woman experiences impacts her ability to access healthcare and support which is controlled by her partner.
Type 3	<ul style="list-style-type: none"> • Woman fears repercussions of revealing her pregnancy from her <i>employer</i>. • This woman conceals her pregnancy for as long as possible but does access antenatal care. • The woman's financial situation and context are important aspects of this type of concealed pregnancy • The pregnancy is revealed only when she has to as the woman fears loss of financial stability.
Type 4	<ul style="list-style-type: none"> • Woman conceals her pregnancy due to fear of <i>Child Protection Services</i>. • Fear of losing her infant leads to concealed pregnancy.

Table 2 (Continued).

Four variations	
Related case	<ul style="list-style-type: none"> • Increased child surveillance heightens the fear experienced and serves to decrease opportunities to seek support. • Woman conceals her pregnancy for a longer time than is recommended. • The person to whom she discloses is not required to keep it secret. Yet the significant other dictates the outcome and the woman has no control over the outcome. • This woman may be forced to terminate her pregnancy, mother or relinquish her infant for adoption.
Contrary case	<ul style="list-style-type: none"> • Woman displays no visible signs of pregnancy and is unaware she is pregnant. • No antecedents or attributes of the case exist

away). It resulted in the loss of both lives (maternal and neonatal death) (Connett 2002).

We also give an example of type two of the model case below:

A newborn infant was found on a roadside (newborn abandonment) in Dublin. Police and Social Services appealed for the infant's mother to come forward (staying away). Police stressed it was not a criminal matter yet traffic checkpoints were seen on TV (fear). The infant became known as Baby Maria. Sensationalist headlines and broadcasting discussed risk assessment (increased child surveillance) and aftercare (fostering) for the infant. The mother of Baby Maria or others have not come forward (secrecy) or been located (hiding). Baby Maria remains in foster care (Murphy Tighe & Lalor 2015b).

Four variations of the borderline case have been identified (Table 2). The inconsistencies in the borderline case help refine the concept and clarify the model case. A borderline case contains some but not all of the attributes of the concept. An example is a woman who conceals her pregnancy due to fear but does reveal her pregnancy usually later than is recommended. The choice is the woman's and she retains control (internally mediated) over the decision to parent her infant or not. An example of type 1 of a borderline case is outlined:

Isobel, a 30 year old unmarried woman (compares own situation to societal expectations), she hides her pregnancy from her family and employer (hiding) telling them she has glandular fever (daytime story) to explain changes in appearance. She births with support of healthcare professionals. The secrecy was to effect an adoption and to withhold this information (secrecy) from others.

What distinguishes the borderline case was that Isobel was aware of her pregnancy and had plans in place to keep her pregnancy secret. Isobel saw no way to mother her infant. The crisis pregnancy counsellor she accessed assisted her maintain the secret and effect an adoption.

Walker and Avant (2011) define a related case as instances that do not contain the critical attributes of the case. The woman does conceal her pregnancy but reveals later than is recommended. The significant other who is informed is not required to keep the pregnancy secret. It is not within the woman's control as to whether she mothers her infant or not. A related case is described from our own research into concealed pregnancy:

Mary 19 year old student kept her pregnancy hidden (secrecy) for six months from everyone except her boyfriend (aware of pregnancy). Her grandmother suspected she was pregnant as she returned home less frequently (staying away). Mary confirmed that she was pregnant after her grandmother enquired. Mary feared her father's reaction (fear of others). This woman's grandmother told her parents who provided support. She accessed antenatal care yet healthcare professionals were unaware she had concealed her pregnancy (secrecy). This woman proceeded to conceal a second pregnancy (recurrence).

This woman described feeling forced to keep her first child and had difficulties with attachment to her infant. This woman concealed her second pregnancy and this baby was placed in foster care.

Walker and Avant (2011) identified the importance of contrary cases providing an example of what the concept is not. We provide an example where the woman displayed no awareness or visible signs of pregnancy:

Ruth a 33 year old mother of 3 was training intensely for a half marathon. She gained no weight and her abdominal tone masked the usual signs of pregnancy. Two hours before entering the race she complained of backpain. An ambulance was called and she later gave birth to a baby girl.

This is a contrary case as the woman experienced no antecedents or attributes of the case.

Limitations

A limitation of this concept analysis is that the majority of the papers reviewed were descriptive literature reviews or case study reports rather than empirical research. A lack of literature exists in relation to concealed pregnancy. The majority of the papers reviewed were of denied pregnancy. The ambiguity around definitions has made this concept analysis complex.

Strengths

Clarity is urgently required to develop a consistent definition of concealed pregnancy. Attempts have been made to research concealed pregnancy postbirth only e.g. prospective case note reviews (Wessel *et al.* 2003), retrospective case review (Nirmal *et al.* 2006, Hatters Friedman *et al.* 2009) and case study (Conlon 2006). However, these may be viewed as reductionist in their approach in terms of operationalizing the concept. This concept analysis is important because it identified critical attributes of the concept based on published literature in the area. This concept analysis contributes an understanding of the concept and its' importance from a clinical practice, policy and educational perspective.

Concealed pregnancy is an important concept from a social policy perspective. Internationally, the proliferation of safe haven and anonymous birthing laws and baby hatches as a response to prevent abandonment suggests that it warrants urgent attention from policy-makers. Baby hatches are provided in many countries including the United States and 10/27 European countries as a mechanism to facilitate safe abandonment. They have been subject to much debate in terms of their efficacy and impact on the rights of the child. In most cases of newborn abandonment concealed pregnancy is a precursor.

Many factors affect a woman's coping response to an unintended or crisis pregnancy. In some jurisdictions women who conceal their pregnancies where tragic outcomes for infants result are treated harshly and serve custodial sentences. It must be remembered that these women may have had no health care or support during pregnancy and some may have had traumatic experiences in their lives. Women who conceal their pregnancies may be demonised and pathologized rather than being viewed as in need of support. This concept analysis has identified that some women who conceal their pregnancies have genuine fears for their safety and require protection. Supportive maternity and crisis pregnancy services are required which are accessible, confidential and non-judgmental. Healthcare professionals should be aware of the psychological morbidity associated with concealed pregnancy and the need for psychological support. Prenatal attachment has been found to be a good predictor of the maternal-infant relationship (Fonagy *et al.* 1991). Contemporary society imposes expectations on pregnant women which discourages the expression of ambivalent or conflicted feelings. The silence and lack of discourse around conflicted feelings about pregnancy such as one which is concealed is problematic.

Conclusions

The concept analysis of concealed pregnancy has enabled us to identify key attributes of this process. The purpose of this paper was to analyse the concept of concealed pregnancy to assist in theory development. Concealed pregnancy is highly contextual to a woman's coping efforts, family, community and culture. This is the first time that a relationship has identified that an interaction of the antecedents is associated with the duration of concealment or the circumstances where the pregnancy or birth are revealed. We suggest that further exploration of the psychosocial processes is required if we are to understand concealed pregnancy more fully to provide individualized responsive care. This concept analysis suggests that a focus on levels of avoidance merits attention. Knowledge of the attributes of concealed pregnancy identified may be helpful for nurses, midwives and researchers so that risk identification can be improved and care pathways developed for women who experience a concealed pregnancy. Longitudinal studies are required to better understand the impact of concealed pregnancy on maternal–infant attachment. These findings may lead to a better understanding of concealed pregnancy and how to respond at such a critical time.

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Author contributions

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- substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;

- drafting the article or revising it critically for important intellectual content.

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