

An Exploration of Young Australian Women's Smoking Cessation Goals across the Trajectory of Pregnancy and Post Birth

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Abstract

Objective: Young pregnant women are more likely than other pregnant women to smoke tobacco during pregnancy and post birth. This study explored young women's perceptions of the factors which impact their smoking cessation goals throughout pregnancy and post birth.

Methods: This qualitative descriptive study was performed at two metropolitan obstetric hospitals in Western Australia. Forty three women aged 16 to 24 years old who reported smoking tobacco at their first antenatal visit were interviewed at each scheduled antenatal visit and every two weeks up to six weeks post birth. Interviews were subjected to thematic analysis.

Results: A total of 244 interviews were performed; a mean of six interviews per woman (four in pregnancy and two post birth). Four overarching themes across three time periods were identified: the baby; the social bond of smoking; the chaotic nature of life; and access to social support. Pregnant women had a foetus-centric approach to cessation. Post birth those who sustained cessation held this belief for their newborn, whilst those who relapsed did not. The social bond of smoking highlighted smoking as the norm. Initially, women sought out non-smokers to support them. A partner's smoking status post birth appeared pivotal to remaining tobacco free. The chaotic nature of life, reflected through multiple stressful, negative events, challenged women in achieving their smoking cessation goals. Women who sought social support appeared to stay smoke free post birth.

Conclusion: The longitudinal nature of this study provides new insight into complex issues faced by this marginalised group of young, pregnant, tobacco smokers throughout the journey of pregnancy and post birth. Findings enhance our understanding of the complex real life issues some young pregnant Australian smokers face and may be considered when women focused smoking cessation interventions are developed.

Keywords: Smoking behaviour; Smoking cessation goals; Pregnancy; Young women; Qualitative; Vulnerable populations

Introduction

Tobacco smoking in pregnancy remains a preventable risk factor associated with pregnancy complications, having serious long-term health implications for both the mother and newborn infant [1]. Obstetric and gynaecological risks include spontaneous abortion, placental abruption, infertility and early menopause [2-4]. Adverse infant outcomes include preterm delivery, low birth weight and sudden infant death syndrome (SIDS) [3,5]. A relationship has been found between women who smoke in pregnancy and the development of adult morbidities in their children, including coronary heart disease and type 2 diabetes [6]. In addition, the children of smokers are more likely than children of non-smokers to become smokers themselves and suffer the side effects from their parents smoking such as respiratory morbidity, asthma and middle ear disease [7,8]. Smoking is

a major risk factor for six of the eight leading causes of death globally [9].

Smoking in pregnancy is declining in most wealthy nations. However, there are cohorts of pregnant women who continue to smoke, including the young [10], socioeconomically disadvantaged, users of alcohol and other drugs (AOD) and Indigenous women [10-20]. Although evidence suggests these sub-groups are the least likely to quit, a higher proportion of women stop smoking in pregnancy than at any other time in their lives [18,21]. This positive change in smoking behaviour is often short-lived, with many women relapsing post birth [22-24].

Researchers, who focus on smoking cessation in pregnancy, have been criticised for their lack of effective innovative interventions at this critical time to promote sustained behavioural change [10]. Blame has been placed on traditional foetus-centric cessation programs which deter women from recognising smoking as a response to their own personal challenges [25]. Few examples exist of gender-informed

smoking cessation programs for younger women, despite recommendations that researchers employ them [10,16,25,26].

Additionally, the social context in which a pregnant woman's smoking occurs has frequently been overlooked [18,23]. Researchers have failed to employ qualitative methodologies which utilise women's narratives to illuminate their complex needs, including psychosocial issues and limited resources [10,17,18]. This gap in knowledge has hindered the development of effective tobacco prevention programs targeting young pregnant women and their sustained cessation post birth.

This paper explores young women's perceptions of the factors which impact their tobacco smoking cessation goals throughout pregnancy and post birth. Building on the foundation of our prior research, we believed exploring young pregnant women's smoking cessation goals, in relation to how they were progressing and whether they could identify situations that triggered their desire to smoke, throughout pregnancy and post birth, would enhance understanding of the complex issues these young women faced [27].

Methods

This study was embedded within a randomised controlled trial (RCT) to assess the feasibility of a multiple component intervention (motivational interviewing, a non-smoking buddy and Carbon Monoxide monitoring), to assist young pregnant women to cease smoking and assess the longer term impacts on their smoking status six weeks post birth. Women's demographic information was recorded as part of the RCT. The results described here are gleaned from follow up interviews conducted in partnership with motivational interviews. Given the paucity of research, a qualitative descriptive approach was added to the RCT to integrate results from two complementary components [28]. A qualitative descriptive approach provides interview data that when analysed can facilitate greater understanding of the similarities of a common phenomenon experienced by a group of participants [28].

Recruitment

Young pregnant tobacco smokers (aged 16 to 24 years), less than 28 weeks gestation at their first hospital appointment, were invited to participate. Some women participating in this study were 16 years old and could be considered as young people who need consent from a parent or guardian [29]. However, as discussed in the Australian National Health and Medical Research Council (NHMRC) guidelines these participants were considered as mature young women, as they were accessing their own healthcare and caring for their own child [29]. In addition, ethical approval was obtained from the Human Research Ethics Committee of both study centres to recruit these women. Ethics approval was gained at two hospital sites in Western Australia (2022/EW and W/13/61). Both hospitals were metropolitan public obstetric hospitals, with the majority of women recruited at the sole tertiary obstetric hospital. The study was funded through a Healthway Starter Grant (22910) and was performed from October 2013 to June 2015.

A research midwife, not involved in clinical care, used verbal and written explanations of the study to aid recruitment and ensure women gave informed consent. Random assignment utilised a third party internet based program with women being assigned to the multiple component intervention with standard antenatal care, or standard care alone.

Motivational interviewing

The intervention group received motivational interviewing every two weeks from recruitment to six weeks post birth. Women could choose to have their interview incorporated into their antenatal appointment or at an alternative time over the phone. Interviews focused on: a woman's smoking goals, how they were progressing with these goals, and whether they could identify situations that triggered their desire to smoke. Interviews lasted between 15 and 60 min, with the topics arising documented as scenarios and direct quotes. Data were stored on a password protected computer in accordance with the Australian NHMRC guidelines [29]. The research midwife performing the motivational interviews completed a motivational interview module.

Data Analysis

Data were analysed at three time points: the first pregnancy interview (where smoking cessation goals were initially discussed); throughout pregnancy (where women reflected on their smoking goals and triggers); and post birth (where the risk of relapse was highest).

Women's interview notes were subjected to thematic analysis by four team members. Themes and definitions were extracted using the six step process outlined by Braun and Clarke [30] and involved: becoming familiar with the data and initial coding of interesting or important codes; deriving themes by joining codes in a meaningful way; assessing if themes fit with original data; defining and labelling themes; and writing up the findings. Each team member analysed between 30 and 40 interview notes, to ensure each set of notes was reviewed by two researchers. Tentative themes were discussed at weekly meetings to negotiate, clarify and refine the findings. Disagreements in interpretation of the data were negotiated by referring back to the original notes. The researchers were female, clinical or academic midwives, with varying experiences of maternity care.

Results

Forty three women in the intervention group were interviewed. A total of 244 interviews were performed. Each woman had a mean of six interviews, with a mean of four conducted in pregnancy and two post birth. Women were on average 20 years old (range 16 to 24 years). The majority were multiparous (93%). Most (75%) had a vaginal birth, with 28% having a preterm baby <37 weeks gestation. A total of 28% had their baby admitted to the Special Care Nursery. Most (63%) women were Caucasian, with 32% being Indigenous Australians. Just over half (51%) lived in low socioeconomic areas, with the majority (84%) being unemployed or not in education. Many (40%) reported using illicit drugs with 16% reporting a history of sexual abuse. Most (74%) women had a partner, with the majority (78%) of partners being smokers.

Exploration of factors affecting smoking cessation goals throughout pregnancy and post birth provided insight into how these women conceptualised their smoking (Table 1). Findings are supported with scenarios and direct quotes from the 43 women, using the original identification number (P1-P80) assigned in the RCT.

Timing	Themes	Definition
First pregnancy interview	Thinking of baby	Initial realisation pregnant. Responsible for another life and smoking harmful
	Because everyone else does	It's the norm and everyone they know (especially their partner) is a smoker
	Encourages me to quit	Source out people who are non-smokers and will support them to stop smoking
	Too much going on	Smoking fulfils needs. Fitting in socially, dealing with stress and pressure of life
Throughout pregnancy	Toxic to baby	Motivation to quit is fetus (not their own health)
	Difficult being around smokers	Addressing partner and/or other family members' smoking difficult
	It's all mayhem	These women experience multiple negative events in their chaotic lives
	Can't afford them	Monetary issues in relation to being able to afford to continue to smoke
	I do other things	Behavioural methods used to reduce and/ or stop smoking
Post birth	Protecting baby	Initial increased vigilance to protect new baby from smokers
	Smoking connects me	Social bonds of smoking, importance of partners smoking status
	Life pressures continue	Chaotic lives continue compounded by issues around from the new baby
	Stress of being a new mum	Pressure/busyness of motherhood. Justification of the need to smoke.

Table 1: Themes reflecting what affected young women's smoking goals throughout pregnancy and post birth.

Each quote was allocated a postfix to indicate smoking status at the end of the study or last point of contact. Postfix's included: 'Q' if the woman had ceased smoking; 'D' if the woman had decreased the number of cigarettes smoked; 'S' if the woman continued to smoke the same number of cigarettes; and 'U' if the woman had increased the number of cigarettes smoked.

The first pregnancy interview

Analysis revealed four themes which reflected how women conceptualised their smoking goals at the first pregnancy interview: thinking of baby; because everyone else does; encourage me to quit; and too much going on.

Thinking of baby

Women had a foetus-centric approach to their smoking cessation. One woman carried 'photos [a foetal ultrasound] around in my wallet...to reinforce my motivation to quit' (P4)^D. Another went to 'sit in the baby's room-no smoking with baby's stuff' (P14)^D. Other narratives illustrated how women had begun to reduce the number of cigarettes they smoked. 'I'm smoking one to two a day. I was smoking a pack a day before pregnancy guilty thinking of baby.' (P20)^D. Additionally another woman described how she was 'down from ten a day by thinking about the baby. Some babies are born sick and I don't want a baby born sick' (P65)^Q.

Because everyone else does

Young women highlighted smoking was an integral component of their lives, binding their social relationships. They smoked 'because everyone else does' (P80)^Q. Family members were often perceived to smoke in proximity to these women. 'Mum smokes and we live together' (P19)^Q and 'when my family are all drinking, find smoking sociable and join in. My partner smokes as well so it's hard' (P61)^U.

Indeed, lack of partner support to stop smoking was acknowledged and accepted as unhelpful. 'My smoking has stayed the same. My partner smokes so this is not helpful' (P24)^S and 'My partner smokes a pack a day and is not supportive' (P76)^U.

Encourages me to quit

Being able to identify one supportive person positively influenced changes in smoking behaviour. 'I just went up to the [regional area] to visit my mother and get clean away from friends who are a bad influence in relation to smoking and drinking' (P65)^Q. Another woman recognised 'all my family are non-smokers and supportive...I used to smoke more around auntie's place as they all smoke inside. Now I avoid going round there' (P71)^Q. One woman's mother came to Perth for three months to help her quit. 'Mum is helping me to quit altogether. The cravings are not too bad' (P29)^U. Being supported had the propensity to encourage self-esteem. 'I'm really proud of myself. I live with dad who is a smoker, but he encourages me to quit' (P66)^Q.

Too much going on

These women's lives were complicated by trauma and the use of AOD. One woman described a scenario where her boyfriend was in jail and 'smoking is my saviour' (P11)^U. Another woman explained that she 'lives in a refuge with lots of other smokers...CPFS [Child Protection Family Services] want me to move to a house where I'm watched 24/7, feels like prison' (P64)^U. Decreasing the use of other drugs was often associated with increased tobacco use. One woman described she was 'previously smoking methamphetamine...use smokes as an outlet while quitting' (P76)^U. Whilst another was 'trying to avoid alcohol and so smokes [cigarettes]' (P65)^Q.

Throughout pregnancy

Analysis revealed five themes reflecting how women conceptualised their smoking goals throughout pregnancy: toxic to baby; difficult being around smokers; it's all mayhem; can't afford them; and I do other things.

Toxic to baby

The initial foetus-centric theme 'Thinking of baby' apparent at the first interview became more embedded as the pregnancy progressed. The motivation to focus on the impact of smoking on their own health was not apparent in women's stories. Visualisation techniques which focused on the baby were common. 'If I want one I think about that toxic smoke going to the baby' (P64)^U and 'When I wake up in the morning and need a smoke, I imagine baby and giving it an oxygen feed, not a cigarette feed' (P41)^Q. Sometimes clinicians encouraged this foetus-centric approach. As one woman stated 'It's all about baby... very stressful. Just had scan, really, really bad...ultrasound person showed me the facts, feel really, really bad, need to get back down' (P61)^U.

Difficult being around smokers

The presence of smokers in the women's lives added a barrier to smoking cessation. Although many comments were around smoking and family and friends, the majority related to the relationship between smoking, themselves and their partner. It was common to share cigarettes with a partner (P7^Q, P53^S, P59^S). Partners provided easy access to cigarettes and the temptation to smoke. One woman described she 'smokes more when with my partner as he is a heavy smoker...boyfriend gets me to roll his cigarettes...seeing, smelling it [the cigarette] makes me want one' (P59^S). However, some women described how their partners were also trying to stop smoking. 'My partner is also a smoker, he smokes more than me...both reducing together...surprised he is quitting' (P72)^D and 'Going okay with partner, he's trying to quit too...can't support each other at this stage. Mum is being helpful' (P25)^D. Further examples illustrating this theme, captured smokers in the woman's life such as a 'grandmother' (P6)^S, 'uncle'(P37)^D or 'family member' (P11)^U, highlighting the pivotal role cigarettes played in these women's social relationships.

It's all mayhem

Throughout pregnancy, the trauma of some women's lives appeared to intensify; as one woman described 'it's just mayhem' (P28)^D. Another stated that she was smoking more as 'I just can't wait to find out about the baby coming home or going into [foster] care' (P4)^D. One woman, who had been informed her baby would be removed from her care, described how despite 'feeling quite angry about everything...now not smoking' (P72)^D. For another, the collision of multiple negative events challenged her attempts to modify her smoking. 'Smoking around 10 [cigarettes] a day, has gone up recently as has been a stressful time mum died last week...my partner found I was living in a refuge so had to move out' (P64)^U and 'smoking 25 a day...back with partner...on way to court to get children back. Stressed as partner lost temper' (P39)^U.

Can't afford them

For many women cost was an issue, having money facilitated smoking. 'Smoking 10 to 15 a day when I can afford them' (P53)^S and 'I can't afford them. I get one off my partner' (P64)^U. Another woman's

narrative described how her partner was trying to restrict her smoking by putting her 'on pocket money, so has less money. Asking cousin for smokes but they are menthol and I don't like menthol' (P61)^U. The relationship between money and smoking was illustrated by one woman's scenario. 'I mainly smoke when get paid...gone for a couple of days not having any, then back to it. If can't afford them don't smoke' (P62)^U.

I do other things

Women developed individual strategies to positively change their smoking. 'Have not had one in five days. If I feel like one I do other things' (P62)^U. One woman shared how 'some days no smoking. Writing chart, keeping a record of smoking frequency, same as what did to get off other addictions. Started a 'Heartmoves' light exercise program' (P4)^D. Another woman stated although she was still smoking the same number of cigarettes, she was actively trying 'to keep occupied and keep distracted, playing games and looking for baby names, using 'Quit For You, Quit For Two' app' (P19)^Q. Whilst one woman described 'smoking half [a cigarette]. Partner in jail, out now. Helped me to stop. More occupied, not sitting around on computer, take dog for a walk, eat more lollies' (P11)^U.

Post birth

Analysis revealed four themes which reflected how women conceptualised their smoking goals post birth: protecting baby; smoking connects me; life pressures continue; and stress of being a new mum.

Protecting baby

For some women having the baby prompted a positive shift in their smoking behaviour. This transformation was described by a few mothers. 'Now a mum and having babies, don't want to smoke around them' (P32)^Q and 'so busy with baby not had any [cigarettes]. Really do not want to expose her to smoke' (P71)^Q. One woman's story illustrated how she had interpreted the health message around cigarette smoke and SIDS. 'Didn't want her in actual contact with stuff [smoke] on my skin and that sort of stuff. I fall asleep...and breathe in her face, increased risk of SIDS' (P7)^Q. For others, not being pregnant removed their incentive to reduce or cease cigarette smoking. 'Being pregnant made it easier to cut down, had something to do it for' (P61)^U. Another woman who had previously stopped described her smoking as 'bad, gone back to it. More than when was pregnant and trying to do the good thing' (P6)^S. One woman disclosed she was now smoking 20 cigarettes a day and that in 'my head not pregnant anymore...do not want to quit' (P11)^U.

Smoking connects me

The social bonds of smoking continued to inhibit woman from addressing their smoking behaviour 'I don't feel guilty about it, everyone around me smokes' (P20)^U. However, the main smoking collaborator was not their family or friends, but their partner. One woman described a scenario where her 'new boyfriend comes over most days and smokes...not interested in quitting. Share a pack of 40 [cigarettes] a day' (P73)^U. Another identified her increased smoking was related to her partner's continued smoking and 'stress with partner' (P31)^U. Others indicated their partner was trying to help. One woman described how they were trying to quit smoking together, but failing as she recounted 'smoking more when he's around' (P28)^D.

Life pressures continue

For some women, the ability to engage in strategies to diminish their smoking, or maintain a smoking free existence was continually challenged by psychological and/or social issues which remained unresolved. The complex nature of one woman's life was illustrated through a description of her baby being apprehended by social services. Thereafter she 'only had access [to her baby] once a week and smoking 20 a day. Now have access every day, trying to get everything right. Smoking has decreased to five unless have a problem with access (P58)^D. Other woman described how they were resigned to smoke, it was a coping mechanism. 'Before I got sick was smoking 50 a day. Now 15-20. Hate being told what to do, want to do the opposite...wasn't 100% in me. Stress things going wrong, need to smoke' (P11)^U. Another acknowledged 'I need a smoke, after a meal, fight with partner or stresses' (P25)^D. For one new mother, smoking was simply 'a way to deal with things' (P62)^U.

Stress of being a new mum

This final theme described the relationship between smoking and the busyness of early motherhood. The wellbeing of their newborn was the central focus. One woman stated she was now 'pretty good with smoking. I don't smoke much...always have one in the morning...starts the day off...no time for smoking' (P37)^D. Another woman shared how she kept a smoke free zone between herself and her baby. 'Don't really have time [to smoke]. Only go outside for 20 min. I can see him [the baby] through the sliding door' (P53)^S. Women justified their need to smoke to maintain their psychological wellbeing, even if it compromised their baby's health. 'For first days of baby's life no one came to see me to look after baby, so couldn't go outside for a smoke, so the first few days of baby's life smoke free. Now if I need a smoke I have to take baby outside with me. So baby is exposed [to cigarettes] but need it for my sanity' (P24)^S and 'Now smoking more than before pregnancy. Only time I have to myself is having a smoke' (P20)^D.

Discussion

This qualitative study captures the self-reported smoking cessation goals across the trajectory of pregnancy and post birth, in a subpopulation of vulnerable young Australian women. Findings revealed four overarching themes across three time periods affecting a woman's ability to achieve her smoking goals: the baby; the social bond of smoking; the chaotic nature of life; and access to social support. Our discussion focuses upon these overarching themes and how they resonate with other research.

The study was strengthened by the fact 244 interviews were performed across pregnancy and post birth, enabling a description of each women's smoking journey. Qualitative addiction research has been acknowledged for describing the social meaning and processes attached to drug use [31]. Smoking had a function, helping many women control their life and emotions whilst allaying stress. However, there was a fine line between using cigarettes to control life and being controlled by cigarettes [16]. Furthermore, women had competing issues such as dealing with AOD use which took priority over their smoking [32]. Rather than one barrier to achieving a smoking goal, there often appeared to be many areas of disadvantage which challenged a woman's attempts to cease smoking [33].

Young pregnant Indigenous Australian smokers are difficult to recruit and engage in research [34]. Although our focus was not specifically to recruit indigenous women, just over one third of women

engaged in this study were Indigenous. We believe the multiple component intervention facilitated their involvement, especially the Carbon Monoxide monitoring which provided immediate visual and auditory feedback on the impact of their tobacco smoking on themselves and their baby. Globally, Indigenous research suggests the provision of culturally appropriate health materials is imperative, to align policy and research [35,36].

Pregnant women in this study were aware smoking tobacco was harmful to their foetus providing them with an incentive to cease smoking. Post birth women who sustained their smoking cessation held this belief for their newborn, whilst those who relapsed had lost the incentive of being pregnant. Others report similar findings, as the motivation to cease smoking in pregnancy relies upon a woman's desire to protect her unborn baby [22,37]. This motivation detracts from woman focused approaches which have greater success in sustained smoking cessation post birth [25]. Indeed, a recent thematic synthesis of 16 studies, including 1031 women, found those who relapse post birth, talk about no longer needing to protect their baby from nicotine [24]. Clinicians have been criticised for interventions which rely on this motivation, especially as a repercussion of this foetus-centric approach is reflected in the finding that post birth, women who relapse are rarely aware of the negative effects of second hand smoke [22,25].

Smoking plays a central role in socialising and social bonding [18,32]. Smoking for these Australian women was perceived to be the norm as the presence of smokers in their lives challenged them from acting on their smoking cessation goals. Initially, those who wanted to quit sought out non-smokers to support them. A partner's smoke free status appeared to be pivotal in women remaining tobacco free post birth. A recent synthesis of 38 studies, including 1100 pregnant women, found living with a partner who smoked increased the likelihood of smoking post birth. Additionally, women whose partners did not challenge their smoking were found to smoke one year post birth [38,39]. Women's smoking issues should be considered alone rather than as a couple [25] as tobacco reduction interventions in pregnancy may cause conflict between a woman and a partner.

Australian women in this study were vulnerable. The majority were unemployed or not in education, two fifths reported using illicit drugs and it was not uncommon for women to have had a history of sexual abuse. Some also had the added trauma of their baby being apprehended by social services. Although women experiencing these issues appeared motivated to cease smoking, the chaotic nature of their lives intervened and they often perceived they could only cope by smoking. Other research has suggested the relationship between trauma, pregnancy and smoking is complex. Trauma frequently occurs in conjunction with psychosocial issues [16-18,32,39,40]. A woman-centred approach to quitting smoking is essential for trauma informed care, as it recognises smoking as a response to an individual's challenges [18]. Similar to other research [24], our findings illustrated the stress associated with being a new mother was used to justify the need to smoke.

Women who sought social support, especially that which incorporated behavioural methods, appeared to stay smoke free post birth. Other research has found women often struggle with their new parenting role and those who associate smoking with their old life have greater success in staying smoke free post birth [24]. Indeed, for some women in this study having the baby prompted a positive shift in their smoking behaviour. Partners and friends have been identified as potential risk factors for young pregnant women who smoke and use

alcohol [10]. Women who used AOD drugs often tried to remove themselves from people and environments where they were exposed to these substances, particularly when their baby may be apprehended.

Study limitations must be acknowledged as qualitative findings should be viewed within the context the study was conducted. Our sample may not reflect issues faced by other women in different cultural and geographic locations. In keeping with qualitative research, rich description has been provided to allow the reader to determine how findings are transferable to their context [28]. Disclosure around smoking, AOD, partner trauma and violence was dependant on willingness to disclose. The stigma associated with these issues may have made it difficult for some women to be transparent about their life events. A longer follow up post birth would have been optimal.

Conclusion

The longitudinal nature of this study provides new insight into complex issues faced by this marginalised group of young, pregnant, tobacco smokers throughout the journey of pregnancy and post birth. Four overarching themes across three time periods affected young women's ability to achieve their smoking goals: the baby; the social bond of smoking; the chaotic nature of life; and access to social support. Women who used AOD and had a partner who smoked were vulnerable to sustained smoking in pregnancy and smoked post birth. Findings highlight the complexity of these women's lives and may be considered when women focused smoking cessation interventions are developed.

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Declaration of Interests

Authors have no competing interests

References

1. Lumley J, Chamberlain C, Dowswell T, Oliver S, Oakley L, et al. (2009) Interventions for promoting smoking cessation during pregnancy. *Cochrane Database Syst Rev* 3: CD001055.
2. National Center for Chronic Disease Prevention and Health Promotion (US) Office on Smoking and Health (2014) The health consequences of smoking-50 years of progress: A report of the Surgeon General. Atlanta: Centers for Disease Control and Prevention.
3. Tong VT, Kissin DM, Bernson D, Copeland G, Boulet SL, et al. (2016) Maternal smoking among women with and without use of assisted reproductive technologies. *J Womens Health (Larchmt)* 25: 1066-1072.
4. Tawfik H, Kline J, Jacobson J, Tehranifar P, Protacio A, et al. (2015) Life course exposure to smoke and early menopause and menopausal transition. *Menopause* 22: 1076-1083.
5. Ali K, Rossor T, Bhat R, Wolff K, Hannam S, et al. (2016) Antenatal substance misuse and smoking and newborn hypoxic challenge response. *Arch Dis Child Fetal Neonatal Ed* 101: F143-148.
6. Gluckman PD, Hanson MA, Cooper C, Thornburg KL (2008) Effect of in utero and early-life conditions on adult health and disease. *N Engl J Med* 359: 61-73.
7. Snodgrass AM, Tan PT, Soh SE, Goh A, Shek LP, et al. (2015) Tobacco smoke exposure and respiratory morbidity in young children. *Tob Control*.
8. Rosen LJ, Noach MB, Winickoff JP, Hovell MF (2012) Parental smoking cessation to protect young children: A systematic review and meta-analysis. *Pediatrics* 129: 141-152.
9. World Health Organization (2016) Report on the global tobacco epidemic 2011-The MPOWER package.
10. Bottorff JL, Poole N, Kelly MT, Greaves L, Marcellus L, et al. (2014) Tobacco and alcohol use in the context of adolescent pregnancy and postpartum: A scoping review of the literature. *Health Soc Care Community* 22: 561-574.
11. MacArthur G, Harrison S, Caldwell D, Hickman M, Campbell R (2016) Peer-led interventions to prevent tobacco, alcohol and/or drug use among young people aged 11-21 years: A systematic review and meta-analysis. *Addiction* 111: 391-407.
12. Mohsin M and Bauman A (2005) Socio-demographic factors associated with smoking and smoking cessation among 426,344 pregnant women in New South Wales, Australia. *BMC Public Health* 5: 138.
13. Passmore E, McGuire R, Correll P, Bentley J (2015) Demographic factors associated with smoking cessation during pregnancy in New South Wales, Australia, 2000-2011. *BMC Public Health* 15: 398.
14. Stanton A and Grimshaw G (2013) Tobacco cessation interventions for young people. *Cochrane Database Syst Rev* 8: CD003289.
15. O'Connor A, Lewis L, McLaurin R, Barnett L (2015) Maternal and neonatal outcomes of hepatitis C positive women attending a midwifery led drug and alcohol service: A West Australian perspective. *Midwifery* 31: 793-797.
16. Greaves L (2015) The meanings of smoking to women and their implications for cessation. *Int J Environ Res Public Health* 12: 1449-1465.
17. Lewis L, Hauck Y, Ronchi F, Allsop S, Doherty D (2016) Psychosocial characteristics and smoking behaviour in young Western Australian pregnant women at their first hospital appointment for pregnancy care. *Public Health* 137: 192-195.
18. Greaves L, Poole N, Okoli C, Hemsing N, Qu A, et al. (2011) Expecting to quit: A best practices review of smoking cessation interventions for pregnant and postpartum women. 2nd ed. Vancouver: Centre of Excellence for Women's Health.
19. Diouf I, Gubhaju L, Chamberlain C, McNamara B, Joshy G, et al. (2016) Trends in maternal and newborn health characteristics and obstetric interventions among Aboriginal and Torres Strait Islander mothers in Western Australia from 1986 to 2009. *Aust N Z J Obstet Gynaecol* 56: 245-251.
20. Hilder L, Zhichao Z, Parker M, Jahan S, Chambers G (2014) Australia's mothers and babies 2012. Canberra: AIHW National Perinatal Epidemiology and Statistics Unit. Cat. No. PER 69.
21. Chamberlain C, O'Mara-Eves A, Oliver S, Caird JR, Perlen SM, et al. (2013) Psychosocial interventions for supporting women to stop smoking in pregnancy. *Cochrane Database Syst Rev* : CD001055.
22. Wen K, Miller S, Roussi P, Belton T, Baman J, et al. (2015) A content analysis of self-reported barriers and facilitators to preventing postpartum smoking relapse among a sample of current and former smokers in an underserved population. *Health Educ Res*: 140-151.
23. Bottorff JL, Kalaw C, Johnson JL, Stewart M, Greaves L, et al. (2006) Couple dynamics during women's tobacco reduction in pregnancy and postpartum. *Nicotine Tob Res* 8: 499-509.
24. Notley C, Blyth A, Craig J, Edwards A, Holland R (2015) Postpartum smoking relapse-A thematic synthesis of qualitative studies. *Addiction* 110: 1712-1723.
25. Greaves L, Hemsing N, Poole N, Bialystok L, O'Leary R (2016) From fetal health to women's health: expanding the gaze on intervening on smoking during pregnancy. *Crit Public Health* 26: 230-238.
26. Torchalla I, Okoli CT, Bottorff JL, Qu A, Poole N, et al. (2012) Smoking cessation programs targeted to women: A systematic review. *Women Health* 52: 32-54.

27. Hauck Y, Ronchi F, Lourey B, Lewis L (2013) Challenges and enablers to smoking cessation for young pregnant Australian women: A qualitative study. *Birth* 40: 202-208.
28. Neergaard MA, Olesen F, Andersen RS, Sondergaard J (2009) Qualitative description - the poor cousin of health research? *BMC Med Res Methodol* 9: 52.
29. National Health and Medical Research Council (2007) National Statement on Ethical Conduct in Human Research 2007. Commonwealth of Australia, Canberra.
30. Braun V and Clarke V (2006) Using thematic analysis in psychology. *Qual Res Psychol* 3:77-101.
31. Neale J, Allen D, Coombes L (2005) Qualitative research methods within the addictions. *Addiction* 100: 1584-1593.
32. Pateman K, Ford P, Fitzgerald L, Mutch A, Yuke K, et al. (2016) Stuck in a catch 22: Attitudes towards smoking cessation among populations vulnerable to social disadvantage. *Addiction* 111: 1048-1056.
33. Twyman L, Bonevski B, Paul C, Bryant J (2014) Perceived barriers to smoking cessation in selected vulnerable groups: A systematic review of the qualitative and quantitative literature. *BMJ Open* 4: e006414.
34. Kira A, Glover M, Walker N, Bauld L (2016) Recruiting pregnant Indigenous women who smoke into a high contact incentivized cessation trial: A feasibility study. *Nicotine Tob Res* 10: 2036-2040.
35. Alexa M, Lefkowitz A, Firestone M, Smylie J, Schwartz R (2016) Effective strategies to reduce commercial tobacco use in Indigenous communities globally: A systematic review. *BMC Public Health* 16.
36. Robertson J, Stevenson L, Usher K, Devine S, Clough A (2015) A review of trends in Indigenous Australian tobacco research (from 2004 to 2013), its associated outputs and evidence of research translation. *Nicotine Tob Res* 8: 1039-1048.
37. Ripley-Moffitt CE, Goldstein AO, Fang WL, Butzen AY, Walker S, et al. (2008) Safe babies: A qualitative analysis of the determinants of postpartum smoke-free and relapse states. *Nicotine Tob Res* 10: 1355-1364.
38. Flemming K, McCaughan D, Angus K, Graham H (2015) Qualitative systematic review: Barriers and facilitators to smoking cessation experienced by women in pregnancy and following childbirth. *J Adv Nurs* 71: 1210-1226.
39. Simmons VN, Sutton SK, Quinn GP, Meade CD, Brandon TH (2014) Prepartum and postpartum predictors of smoking. *Nicotine Tob Res* 16: 461-468.
40. Fallin A, Miller A, Ashford K (2016) Smoking among pregnant women in outpatient treatment for opioid dependence: a qualitative inquiry. *Nicotine Tob Res* 18: 1727-1732.