


Scoping review into models of interconception care delivered at well-child visits for the Australian context

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ABSTRACT

Background. The interconception period provides an opportunity to address women's health risks and optimise birth spacing before the next pregnancy. This scoping review aimed to identify models of interconception care (ICC) delivered at well-child visits (WCVs) around the world, review the impacts of ICC delivered, and what the feasibility and applicability of these models were. **Methods.** The global review included clinical studies that were identified using medical subject headings (MeSH) and keyword combinations. Studies were included if they met the criteria: were clinical studies; examined a model of ICC; were conducted by a registered health professional; and examined women who had given birth within the last 24-months. The following databases were searched: Medline (OVID); CINAHL (EBSCO); PubMed; and Embase (OVID). Relevant studies were screened in Covidence and the data was then extracted using a narrative analysis. **Results.** Fifteen studies met the inclusion criteria. The benefits of ICC delivered at WCVs included screening for maternal health behaviours and conditions and increase women's uptake of interventions. The studies identified that implementing ICC at WCVs was acceptable to women. Identified challenges included lack of time for health providers, lack of education among women and health providers, and limited funding for WCVs. **Conclusion.** ICC interventions found in this review included family planning counselling and provision of long-acting contraception; health promotion of folic acid; and postpartum depression screening. The research concluded that ICC delivered at WCVs contributes to improving health behaviours for future pregnancies. Increased capacity for this care at WCVs could be achieved with targeted resources and time allocation.

Keywords: health promotion, interconception care, maternal and child health care, maternal screening, postpartum care, preconception care, scoping review, well-child visits.

Introduction

The interconception period is a chance for women and clinicians to focus on a woman's health behaviours and medical history, assess her mental and physical wellbeing, and optimise birth spacing prior to the next pregnancy (Louis *et al.* 2019). Interconception care (ICC) involves screening for risk factors such as overweight/obesity and tobacco use, and offering advice and information on folic acid supplementation and contraception (Frayne *et al.* 2021). ICC models also consider the woman's previous pregnancies, examining any genetic conditions that may impact future pregnancies, or conditions that arose in past pregnancies, such as gestational diabetes, providing support to manage these into the next pregnancy and beyond (DeCesare *et al.* 2015).

Regarding birth spacing, there is quality evidence, although the data are beset with issues of confounding, that intervals of 6 months from the birth of one baby to the conception of the next increases the risk of adverse perinatal outcomes including small in size for gestational age, low birthweight, autism, and maternal obesity (Conde-Agudelo *et al.* 2007; Ball *et al.* 2014; Cheslack-Postava *et al.* 2014; Hanley *et al.* 2017). Consequently, ICC should be offered to women in between their pregnancies to improve their own health

outcomes, along with the health of their future pregnancies and future children (Rosener *et al.* 2016; Louis *et al.* 2019; Frayne *et al.* 2021).

Researchers and clinicians have identified that well-child visits (WCVs) (the term we will use in this review) are a potential time for ICC. WCVs focus primarily on health promotion, developmental screening of children, parenting advice and referrals to specialist health services where required (Rossiter *et al.* 2019). Women are more likely to attend their child's healthcare appointment than attend to their own postpartum health needs (Rosener *et al.* 2016; Hartman *et al.* 2020). WCVs do not routinely provide scheduled or routine assessments of women beyond an initial 6-week postpartum check (Rossiter *et al.* 2019). Thus, many women do not receive a life-cycle approach to maternal health care and continue to have their healthcare needs siloed (Bell *et al.* 2018).

The aim of this review is to examine models of ICC delivered at WCVs around the world, looking at the impact ICC has on women's health and health behaviours, and the acceptability and feasibility of delivering ICC at WCVs as perceived by women and clinicians.

Methods

This review followed a scoping review methodology, as outlined by the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA-P), which focuses on how to report literature that evaluates healthcare interventions (PRISMA 2021). The review process was informed by guidance from the Joanna Briggs Institute (Peters *et al.* 2015) and examined the literature around what types of care were included in ICC. The authors searched for cohort studies, randomised control trials and cross-sectional studies examining models of ICC delivered at WCVs published over a 20-year period, between January 2002 and January 2022, in the following academic databases: Medline (OVID); CINAHL (EBSCO); PubMed; and Embase (OVID). We used the

following medical subject headings (MeSH) search terms to guide our search: interconception care; women, maternal and child health services; well-child visits; health promotion; and healthy behaviours – see Table 1 for the full list of terms used. Additionally, we conducted key word searches within these databases, and searched the reference lists of relevant articles by hand. All peer-reviewed articles published in English that examined or evaluated a model of ICC delivered at WCVs were imported into Covidence (Veritas Health Innovation Ltd), an online tool to systematically screen citations, abstracts, and full texts for reviews.

Eligible studies for the review had to meet the inclusion criteria. Peer-reviewed publications that conducted clinical studies, such as randomised control trials (RCTs), cohort studies, and cross-sectional studies, were included. Studies were also included if they examined a model of ICC that supported behavioural change in postpartum women; were conducted by registered nurses, registered midwives, or medical doctors; and examined women who had given birth within the last 24 months. Studies were excluded if published >20 years ago; focused only on models of preconception care as we were interested solely in models that addressed care given to women after giving birth, while also considering their family planning needs; were a retrospective study looking at past pregnancies; or were literature reviews, policy papers, commentaries, or qualitative studies.

The titles and abstracts, followed by the full-texts, were screened independently by two authors (MT and KC) in reference to the inclusion and exclusion criteria. If there were any conflicts regarding the eligibility of an article for inclusion, MT and KC would discuss with a third reviewer (KB), who would make the final decision.

As the criterion of a scoping review is to assess the scope of available literature, we did not provide a quality assessment of the research (PRISMA 2021). Instead, once we had determined the relevant articles as per the inclusion and exclusion criteria, we systematically read the articles, applying a narrative analysis to identify key themes from the reviewed manuscripts.

Table 1. Summary of search terms.

| Key concepts | Interconception care | Women | Maternal and child health services | Health promotion |
|--|--|--|--|--|
| Free-text terms/natural language terms | <ul style="list-style-type: none"> - Preconception - Postpartum - Inter-pregnancy - Pregnancy intervals - Inter-natal | <ul style="list-style-type: none"> - Reproductive age - Human - Female - Mother - Maternal - Pregnancy | <ul style="list-style-type: none"> - Well-child checks - Family and child health - Early child health | <ul style="list-style-type: none"> - Healthy behaviours - Primary health care - Preventative health care - Folic acid - Smoking cessation - Family planning - Weight management - Gestational diabetes |
| Controlled vocabulary terms/subject terms (MeSH terms, exploded terms) | <ul style="list-style-type: none"> - Postnatal care - Preconception care - Birth intervals (family planning) | <ul style="list-style-type: none"> - Maternal health (women's health) | <ul style="list-style-type: none"> - Maternal health care - Maternal-child health services | <ul style="list-style-type: none"> - Health behaviours - Health risk behaviours - Tobacco use cessation - Family planning |

Results

A total of 97 studies were imported into Covidence, with 13 duplicates removed. Eighty-four titles and abstracts were screened in reference to the inclusion and exclusion criteria. Forty-nine studies were excluded. Thirty-five studies were then assessed for full-text eligibility, and from the full-text screen, 15 studies were included in the final review, the details of which can be found in Table 2. Ten studies focused on the impacts of ICC delivered at WCVs, four examined women's perceptions of co-locating ICC at WCVs, and two examined perceptions of health professionals delivering ICC at WCVs. The included studies were made up of cohort studies, cross-sectional studies, randomised control studies and comparative studies, were all based in either the USA or the Netherlands, and were solely delivered by medical doctors. A PRISMA flow diagram detailing the review process can be found in Fig. 1.

A narrative analysis was applied to the studies, and the following themes were identified: impact of ICC interventions delivered at WCVs; postpartum women's perceptions on the acceptability of receiving ICC at WCVs; and health professionals' perceptions of delivering interconception care at well-child visits.

Care delivered at well-child visits

A total of 11 studies focused on the implementation of interconception models of care at WCVs. Four studies examined the uptake of long-acting reversible contraception (LARC). Two of these found that LARC uptake and use was significantly higher for women who had a co-located visit compared with the control group (Haider *et al.* 2020; Smith *et al.* 2021). Women who completed a self-administered Postpartum Questionnaire prior to their WCV were more likely to use a LARC than those in the control group (Caskey *et al.* 2021). And family planning counselling was provided more frequently when ICC was co-located with WCVs (Frayne *et al.* 2021). Four studies examined the use of WCVs to deliver postnatal depression (PND) screening, and all found that PND was more frequently detected in women who received repetitive screenings and follow-up care at the WCVs (Chaudron *et al.* 2004; Sheeder *et al.* 2009; van der Zee-van den Berg *et al.* 2017; Frayne *et al.* 2021). Four studies focused on the effect of education on maternal folic acid use when delivered at WCVs. Two of the studies found that women who received ICC had higher rates of taking multivitamins by their next WCV (Upadhyia *et al.* 2020; DeMarco *et al.* 2021). Frayne *et al.* (2021) found an increase in multivitamin counselling delivered by clinicians, whereas de Smit *et al.* (2015) found little difference in uptake between the intervention and control groups. One study examined the benefits of screening for maternal health risks at WCVs, determining that identifying modifiable risk factors for subsequent pregnancies was feasible during

WCVs (Srinivasan *et al.* 2018). Overall, the 11 studies found that ICC interventions and screening were positive for postpartum women's health outcomes and health behaviours.

Women's perceptions on the acceptability of receiving ICC at WCVs

Four studies examined the perceptions of women receiving maternal care at their child's WCV (Fagan *et al.* 2009; Kumaraswami *et al.* 2018; Sijpkens *et al.* 2019; Haider *et al.* 2020). All four of these studies found the majority of participants were comfortable discussing contraception at their child's WCV; were likely to accept the advice given by the child's health professional; would use a prescription for contraception provided by the health professional; and felt the merging of ICC at their child's WCV was convenient for their family planning (Fagan *et al.* 2009; Kumaraswami *et al.* 2018; Sijpkens *et al.* 2019; Haider *et al.* 2020). Sijpkens *et al.* (2019), however, also found that women were unclear on the benefits ICC would have for them or their child.

Health professionals' perceptions of delivering interconception care at well-child visits

Two studies examined the perceptions of WCV health professionals delivering ICC and assessed their attitudes on the feasibility of doing so (Caskey *et al.* 2016; Sijpkens *et al.* 2019). The health professionals reported that ICC was important for prevention, family planning and ensuring all women were cared for appropriately (Sijpkens *et al.* 2019). Clinicians in the study by Caskey *et al.* (2016) reported they felt comfortable discussing and providing family planning counselling; however, few had done it before. Both studies reported that health professionals working in WCVs did not find it feasible to include models of ICC while already being stretched for time, and reported they feared it would detract time from the child, who remained their top priority (Caskey *et al.* 2016; Sijpkens *et al.* 2019).

Discussion

This scoping review was conducted to assess the current models of ICC delivered in WCVs around the world. Fifteen relevant studies were found to highlight the benefits and possibilities of delivering ICC at WCVs. The research identifies the benefits of ICC on women's health outcomes and preparation for subsequent pregnancies, specifically the uptake of contraception and prenatal folic acid use. It also shows that women respond positively to the idea of receiving health advice from their child's health practitioner. The challenges to implementing ICC include clinicians' lack of time to incorporate the delivery of regular ICC at WCVs; women's lack of understanding on the benefits of ICC; and disagreement among clinicians about what is involved in ICC. This review highlights that to introduce an in-depth ICC model into

Table 2. Summary of included study characteristics.

| Covidence # | Study ID | Title | Lead author | Country in which the study conducted | Aim of study | Study design | Start date | End date | Study funding sources | Possible conflict for study authors | Population description | Inclusion criteria | Exclusion criteria | Method of recruitment | Total number of participants |
|-------------|--|--|-------------------|--------------------------------------|---|--|------------------|-----------------|--|---|--|--|-----------------------------------|-----------------------|------------------------------|
| 6 | Caskey et al. (2016) | A novel approach to postpartum contraception: a pilot project of paediatricians' role during the well-baby visit | Rachel Caskey | United States | This project aimed to test the feasibility and acceptability of having paediatric residents administer a simplified Reproductive Life Plan Tool (RLPT) with postpartum women during routine infant care. | Mixed methods approach using both qualitative and quantitative study designs | Not recorded | Not recorded | This document was developed under grant CFDA 93.767 from the U.S. Department of Health and Human Services, Centres for Medicare and Medicaid Services. | The authors declare that they have no competing interests | Women who reported to their physician: (1) an interest in changing her method of contraception; or (2) no intention of ever having more children and not currently using a long-acting reversible (LARC) method of contraception | Mothers of any age, infant aged ≤16 weeks of age were eligible for the intervention. | None identified | Clinic patients | 50 |
| 81 | Caskey et al. (2021) | Addressing women's healthcare needs during paediatric care | Rachel N. Caskey | United States | To test the impact of an innovative system-level intervention in which postpartum (PP) women completed a brief self-administered Postpartum Questionnaire for Mothers (PQM) during their infants' 2-month paediatric visit, on subsequent receipt of primary health care and contraception by 6 months PP, compared with usual care | Before and after | January 2018 | November 2018 | All phases of this study were supported by an Agency for Healthcare Research and Quality's (AHRQ) grant, R03H025265 | None disclosed | PP women at 2 months and 6 months postpartum at a well-baby clinic | Postpartum women who were between the ages of 15 and 49 years, spoke either English or Spanish and received their own health care at the University of Illinois Health and Hospital Systems (UIH). | Women who were currently pregnant | Clinic patients | 100 |
| 97 | Chaudron et al. (2004) | Detection of postpartum depressive symptoms by screening at well-child visits | Linda H. Chaudron | United States | The study objectives were to: (1) assess the feasibility of universal postpartum | Cohort study | 31 December 1998 | 21 October 2001 | National Institute of mental Health Grants K23MH64476 (Dr Chaudron) and | Not recorded | Mothers with children born between 31 December 1998, and 5 October 1999, | Not recorded | Not recorded | Medical records | 220 |

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Table 2. (Continued).

| Covidence # | Study ID | Title | Lead author | Country in which the study conducted | Aim of study | Study design | Start date | End date | Study funding sources | Possible conflict for study authors | Population description | Inclusion criteria | Exclusion criteria | Method of recruitment | Total number of participants |
|-------------|-----------------------|--|--------------------|--------------------------------------|---|-----------------------------------|--------------|------------|--|-------------------------------------|---|--|---|-----------------------|------------------------------|
| | | | | | depression screening using a standardised screening tool during first-year well-child visits; (2) establish the prevalence of postpartum depressive symptoms among mothers who accompany their children to first-year well-child visits; (3) compare detection of postpartum depressive symptoms before and after institution of standardised screening at each first-year well-child visit; and (4) compare social work referrals before and after systematic screening as a preliminary indicator of the screening's effectiveness. | | | | K24MH01759 (Dr Conwell) | | and who did not have Edinburgh Postnatal Depression Scale (EPDS) screening were placed into cohort 1 Mothers with children born between 29 December 1999 and 21 October 2001, who did have at least one well-child visit and had EPDS screening were placed into cohort 2 | | | | |
| 10 | de Smit et al. (2015) | Effects of a simple educational intervention in well-baby clinics on women's knowledge about and intake of folic acid supplements in | Denhard. J de Smit | The Netherlands | To test the hypothesis that a concise intervention to promote the preconception use of folic acid (FA) supplements among mothers who visit a well-baby clinic (WBC) for the 6- | Non-randomised experimental study | October 2007 | March 2008 | Task Force Folic Acid (2004–2007) of the Dutch Ministry of Health (MoH). The MoH had no role in the design, analysis or writing of this article. | None identified | Women with 0- to 12-month-olds attending Well-child visits | (1) Mother herself attended the 6 months and 11 months well-child visits (2) Mother was able to and consented | Women who were unable to complete the questionnaire due to a lack of sufficient language skills were excluded | Clinic patients | 413 |

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Table 2. (Continued).

| Covidence # | Study ID | Title | Lead author | Country in which the study conducted | Aim of study | Study design | Start date | End date | Study funding sources | Possible conflict for study authors | Population description | Inclusion criteria | Exclusion criteria | Method of recruitment | Total number of participants |
|-------------|---------------------------------------|---|------------------|--------------------------------------|--|-----------------------|--------------|----------------|---|--|---|---|--|-----------------------|------------------------------|
| | | the periconceptional period: a controlled trial | | | month check-up of their youngest child is effective. Effectiveness was measured as an intention to use or actual use of FA supplements before the next pregnancy among women who expected to be pregnant within 0–12 months. | | | | | | | to fill in the questionnaire | | | |
| 11 | DeMarco et al. (2021) | Interventions to increase multivitamin use among women in the interconception period: an IMPLICIT network study | Mario P. DeMarco | United States | To determine the effectiveness of an innovative approach to improving folate supplementation in women prior to conception during their well-child visits. | Cross sectional study | January 2015 | June 2018 | March of Dimes as well as the Pennsylvania Department of Health | No conflict of interest | Postpartum mothers attended well-child visits | Mothers with children aged 0–24 months | Not described | Clinic patients | 11 521 |
| 16 | Frayne et al. (2021) | Interconception care for mothers at well-child visits after implementation of the IMPLICIT model | Daniel Frayne | United States | To determine whether the post-intervention survey reflected significant increases in recalled receipt of discussions and recommendations in the four focus areas | Cross sectional study | January 2011 | September 2018 | None | The authors have no conflict of interest | Postpartum women attending their scheduled well-child visit | Mothers presenting with their children for either the 12- or 24-month well-child visits. English and Spanish speakers | Mothers under the age of 17 years who were not legally emancipated were excluded if a legal guardian was not present | Clinic patients | 307 |
| 13 | Fagan et al. (2009) | A survey of mothers' comfort discussing contraception with infant providers at well-child visits | E. Blake Fagan | United States | To determine whether mothers feel comfortable with their infants' providers discussing contraception with them at their infants' well-child checks | Cross sectional study | January 2015 | June 2018 | None declared | None declared | Mountain Area Health Education Centre's Family Health Centre (MAHEC FHC), a family medicine practice/ residency | Women with babies aged 0–17 months attended scheduled well-child visits | Non-birth mothers who had already completed the survey at an earlier visit | Clinic patients | 132 |

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Table 2. (Continued).

| Covidence # | Study ID | Title | Lead author | Country in which the study conducted | Aim of study | Study design | Start date | End date | Study funding sources | Possible conflict for study authors | Population description | Inclusion criteria | Exclusion criteria | Method of recruitment | Total number of participants |
|-------------|----------------------------------|--|------------------|--------------------------------------|---|-----------------------------|---------------|--------------|---|--|--|---|--|-----------------------|------------------------------|
| | | | | | | | | | | | training program | | | | |
| 23 | Haider <i>et al.</i> (2020) | A novel approach to postpartum contraception provision combined with infant care: a randomised, controlled trial | Sadia Haider | United States | The objectives are two-fold: (1) to measure if a novel system-level intervention offering contraceptive counselling and provision, in conjunction with an infant's well-baby visit during the first 4 months of life, increases postpartum women's use of LARC, compared with usual care and (2) to describe patient-centred facilitators and barriers to implementing a novel system-level intervention at the well-baby visit | Randomised controlled trial | January 2015 | January 2017 | Funding received from the society of Family Planning [grant number SFPRF7-15] and the Centre for Clinical and Translational Science [grant number UL1R029879]. Additionally, the project described was supported by the National Centre for Advancing Translational Sciences, National Institutes of Health [grant number UL1TR002003]. | The authors declare no conflicting interests | Women bringing their infants in for care at the general paediatric clinic within the academic medical centre | - Women with infants aged ≤4.5 months - Women who were patients at the medical centre or affiliated clinic - Women who spoke English or Spanish | - Women who were pregnant - Women who had previously received a LARC method or permanent sterilisation | Clinic patients | 446 |
| 31 | Kumaraswami <i>et al.</i> (2018) | Acceptability of postpartum contraception counselling at the well-baby visit | Tara Kumaraswami | United States | The objective was to determine the acceptability of pairing postpartum contraception counselling with well-baby care in the Paediatrician's office and compare acceptability with that of a routine postpartum visit | Cross sectional study | November 2011 | March 2012 | The study was funded by a grant through the Society of Family Planning Research Fund, project number SFPRF11-13. | Not recorded | Women presenting with their infant for a well-baby visit. | - Women aged between 15 and 45 years - Women who were 0–12 weeks' postpartum - Women who were English speaking | - Women who had already participated in the study - Women who were not the birth mother - Women who had undergone permanent sterilisation - Women who had | Clinic patients | 100 |

(Continued on next page)

Table 2. (Continued).

| Covidence # | Study ID | Title | Lead author | Country in which the study conducted | Aim of study | Study design | Start date | End date | Study funding sources | Possible conflict for study authors | Population description | Inclusion criteria | Exclusion criteria | Method of recruitment | Total number of participants |
|-------------|--|---|----------------------|--------------------------------------|---|-----------------------|---------------|----------------|--|-------------------------------------|--|---|---|-----------------------|--|
| | | | | | | | | | | | | | delivered at a different institution - Women who had delivered prior to 32 weeks' gestation - Women who were partnered exclusively with a woman | | |
| 43 | Sijpkens et al. (2019) | Integrating interconception care in preventive child healthcare services: the Healthy Pregnancy 4 All program | Meertien K. Sijpkens | The Netherlands | This study aimed to implement and evaluate the promotion and delivery of Interconception care (ICC) in Preventative Child Health Care (PCHC) centres in the Netherlands | Case control study | Not recorded | Not recorded | The Healthy Pregnancy 4 All study is funded by the Dutch Ministry of Health, Welfare and Sport, The Hague (grant number 323911). | None declared | Preventative Child Health Care (PCHC) professionals and women who may become pregnant again attending PCHC services | Women aged >18 years Sufficient understanding of the Dutch or English language | Not stated | Clinic patients | 112 health professionals and 385 women |
| 45 | Smith et al. (2021) | Implementing interconception care in a dyadic adolescent mother-child clinic | Hana Smith | United States | The purpose of this study was to implement structured ICC screening in an adolescent mother-child clinic and examine maternal health outcomes. | Cross sectional study | October 2018 | September 2019 | Colorado Chapter of the March of Dimes | Not recorded | Women presenting to any well-child visit of their child who were aged between 0 and 24 months during the time period of the study. | If they had at least one visit during the study period with a child at a well-child visit who were aged between 0 and 24 months | Pregnant during the time of study - Child older than 24 months | Clinic patients | 447 |
| 47 | Srinivasan et al. (2018) | Delivering interconception care during well-child visits: an IMPLICIT network study | Sukanya Srinivasan | United States | The Interventions to Minimise Preterm and Low Birth Weight Infants through Continuous Improvement Techniques (IMPLICIT) | Prevalence study | February 2015 | April 2017 | National March of Dimes; Pennsylvania, New York, and North Carolina March of Dimes; Pennsylvania Department of | None declared | Mothers aged ≥13 years who presented with their children for newborn to 24-month well-child visits | Mothers attending well-child visits with children aged 2–24 months | Not described | Clinic patients | 5927 |

(Continued on next page)

Table 2. (Continued).

| Covidence # | Study ID | Title | Lead author | Country in which the study conducted | Aim of study | Study design | Start date | End date | Study funding sources | Possible conflict for study authors | Population description | Inclusion criteria | Exclusion criteria | Method of recruitment | Total number of participants |
|-------------|--|--|--------------------------------------|--------------------------------------|---|--|-----------------|--------------|---|-------------------------------------|---|--|--------------------|-----------------------|------------------------------|
| | | | | | Network developed and implemented a unique approach to ICC by assessing mothers during their baby's well-child visits (WCVs) up to 24 months. | | | | Health; Pennsylvania chapter of the American Academy of Paediatrics; ShadySide Hospital Foundation, Pittsburgh, PA; St. Margaret Hospital Foundation, Pittsburgh, PA. | | | | | | |
| 52 | Upadhy et al. (2020) | Cluster randomised trial of a pre/interconception health intervention for mothers during paediatric visits | Krishna K. Upadhy | United States | To determine whether a brief intervention within paediatric primary care with mothers of young children increases positive interconception health behaviours compared to education materials alone | Cluster randomised control | October 2013 | March 2015 | Johns Hopkins Health Care; Aetna, Abell and Straus Foundations; and the Zanyvl and Isabelle Krieger Fund. | None disclosed | Mothers presenting with their child who were aged ≤ 12 months for a well-care visit to one of the four practices were approached for participation | - Biologic mothers - English- or Spanish-speaking - Mental and physical capacity to participate in the study assessments | Not described | Clinic patients | 415 |
| 75 | Van der Zee-van den Berg et al. (2017) | Post-up study: postpartum depression screening in well-child care and maternal outcomes | Angarath I. van der Zee-van den Berg | The Netherlands | The aim is to screen for postpartum depression in WCC followed by routine care for screen-positive mothers results in improved outcomes at both the maternal level (state of depression, parenting, health-related quality of life, and anxiety symptoms) and child level (decreased rates of socioemotional problems) at the end of the first year postpartum compared with CAU. | Quasi-experimental, comparative design | 1 December 2012 | 1 April 2014 | The Netherlands Organisation for Health Research and Development (grant 80-82470-98-012) | None disclosed | Mothers visiting Dutch well-child checks | Mothers visiting Dutch well-child checks (WCC) centres, including after childbirth | Not recorded | Clinic patients | 3089 |

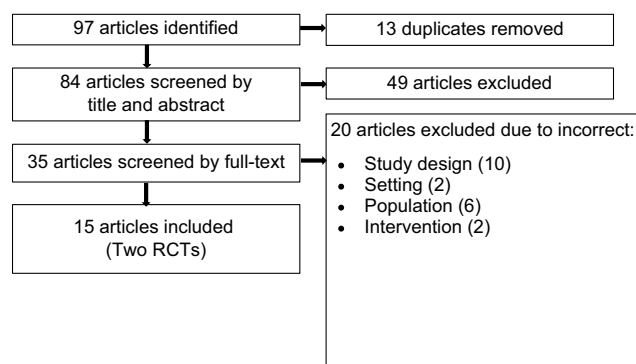


Fig. 1. Flow diagram for the scoping review.

WCVs would require additional funding, training, and time for clinicians, but if done effectively, would benefit postpartum women and their future pregnancies and children.

Much research has been conducted on the benefits and importance of preconception health care for women as they prepare for their first or subsequent pregnancy journey. Preconception care is vital for pregnancy success and a key step in improving generational health through a life cycle approach to health and health care (Stephenson *et al.* 2018). Preconception health care has been found to improve health literacy on risk factors in pregnancy (Mittal *et al.* 2014; Toivonen *et al.* 2018; Kandel *et al.* 2021); improve risky health behaviours, such as tobacco and alcohol use during pregnancy (Shannon *et al.* 2014); increase folic acid use (Elsinga *et al.* 2008; Stephenson *et al.* 2018); and provide counselling on weight loss (Mazza *et al.* 2013). Despite the multitude of benefits preconception care can provide women, women have low understanding of its benefits, and are unlikely to alter their health behaviours prior to conception or initiate preconception healthcare checks (Barker *et al.* 2018; Toivonen *et al.* 2018). The research recommends that preconception care is best provided in routine primary healthcare settings (Johnson *et al.* 2006; Barker *et al.* 2018); however, the challenge is that most women do not attend regular primary health care until they are pregnant or have had their child (Stephenson *et al.* 2018). As a consequence, ICC, delivered at routine WCVs, can align with this recommendation and be used to improve women's access to models of preconception health care, providing them with interventions to improve their health and health behaviours in preparation for subsequent pregnancies.

However, as identified in this scoping review, there are challenges to the integration of preconception care into WCVs, including a lack of clinician's time and their perceived capacity to deliver models of ICC to women while also conducting a WCV (Caskey *et al.* 2016; Sijpkens *et al.* 2019). WCVs are usually delivered by GPs or specialised child health nurses. In this scoping review, all studies included examined models where the practitioner was a doctor. Additional

research examining benefits of task sharing offer a solution to this barrier. Task sharing offers a method to address staff shortages, time constraints faced by clinicians and improve access to care (WHO 2017). Task sharing is intended to create a more equitable distribution of labour between health workers, and thus suits the delivery of ICC and WCVs, as it can broaden the scope of who delivers the model of care to women (WHO 2017). Providing training on ICC to a wider scope of clinicians, such as nurses and midwives, would see benefits for both women and clinician's interconception health literacy, reduce the chances of women continuing to practice risky health behaviours in future pregnancies, and address the barrier of time for current clinicians delivering ICC (Kizirian *et al.* 2019; Dorney *et al.* 2021; Walker *et al.* 2021). The key to successfully introducing task sharing into the interconception period is providing education and training to clinicians (Price and Reichert 2017). Ensuring the health literacy of the clinical workforce will aid in improving the health literacy of women and men preparing for conception.

The findings from this review show ICC co-located and delivered at WCVs improves the uptake of healthy behaviours in women, and it shows that women are comfortable to receive co-located care; however, time, funding and social attitudes challenge the delivery and uptake of the service. Johnson *et al.* (2006) published their recommendations to improve the delivery of preconception health care, which is closely linked to the delivery of ICC, and they suggested 10 recommendations to address the gap between need and delivery. Primarily their recommendations point to enhancing the health literacy of all people on the importance of pre-pregnancy health checks; promoting the idea that the responsibility lies with individuals; utilising postpartum visits to deliver ICC; and creating public health programs and strategies to promote the importance and means to access it (Johnson *et al.* 2006).

The recommendations from both this review and that of broader literature, and the importance of preconception and interconception health care on women and children's life cycle of health, reinforces the importance of finding a method to make this model of care accessible to all women and deliverable by clinicians. In implementing this, it would be crucial to increase health literacy around interconception care. Practice change may be enabled with incentives for clinicians delivering the care.

Strengths and limitations

This scoping review was guided by PRISMA-P guidelines and a protocol reviewed by the whole research team. Each publication was reviewed by two independent reviewers who met regularly with a third independent reviewer to resolve conflicts. This review used a bibliographic manager (EndNote 2.0; Clarivate) to ensure that all articles were

accounted for during the process. This scoping review has some limitations that need to be acknowledged. First, it only included papers published in English, which may have excluded some relevant studies. Second, due to the nature of scoping reviews, the quality of the individual studies was not assessed. Third, the studies included in this review were from high-income countries; therefore, findings cannot be extrapolated to all economic experiences. Finally, the studies examined provided little evidence into long-term impacts of ICC on women and children, and did not address health behaviours such as obesity and tobacco use. Despite these limitations, this scoping review highlights the benefits of delivering ICC at WCVs on maternal outcomes and explored the barriers to implementation and how these may be addressed.

Conclusion

ICC is associated with improving maternal and infant health outcomes in the peri- and post-partum periods and beyond. Co-locating ICC services with WCVs offers an opportunity for healthcare providers to deliver holistic care that will impact positively on a woman, her child, and any future pregnancies and children she may have. This review identified that ICC can increase use of contraception, increase folic acid use, and improve detection of postpartum depression symptoms; it also determined that women were happy to receive co-located care with their children, but that clinicians did not have the capacity to deliver it successfully. Any ICC model developed should consider the barriers of time and scope of practice and responsibility, so targeted training, resource and time allocation will enable implementation.

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