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Review Article

Identifying psychosocial vulnerabilities in pregnancy: A mixed-method systematic review of the knowledge base of antenatal conversational psychosocial assessment tools

Pernille Gram [a,b,*,1], Clara Graugaard Andersen [a,c,1], Kirsten Schultz Petersen [a], Marianne Stistrup Frederiksen [c], Louise Lund Holm Thomsen [c], Charlotte Overgaard [c]

[a] Department of Health Science and Technology, Aalborg University, Selma Lagerløfs Vej 249, Gistrup 9260, Denmark
[b] Center for General Practice, Aalborg University, Selma Lagerløfs Vej 249, Gistrup 9260, Denmark
[c] Research Team of Women, Children, Youth and Families Health, Unit of Health Promotion, Department of Public Health, University of Southern Denmark, Esbjerg Ø 6705, Denmark

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ABSTRACT

Background: Early identification of psychosocial vulnerability among expectant parents through psychosocial assessment is increasingly recommended within maternity care. For routine antenatal assessment, a strong recognition exists regarding conversational assessment tools. However, the knowledge base of conversational tools is limited, inhibiting their clinical use.
Objective: Synthesising existing knowledge pertaining to antenatal conversational psychosocial assessment tools, including identifying characteristics, acceptability, performance, effectiveness and unintended consequences.
Design: Mixed-method systematic review based on searches in CINAHL, PubMed, Embase, PsycINFO, Cochrane and Scopus. 20 out of 5394 studies were included and synthesised with a convergent integrated approach using a thematic analysis strategy.
Findings: We identified seven antenatal psychosocial assessment tools that partially or completely utilised a conversational approach. Women's acceptability was high, and tools were generally found to support person-centred communication and the parent-health care professional relationship. Evidence regarding effectiveness and performance of conversational tools was limited. Unintended consequences were found, including some women having negative experiences related to assessment of intimate partner violence, lack of preparation and lack of relevance. High acceptability was reported by health care professionals who considered the tools as valuable and enhancing of identification of vulnerability. Unintended consequences, including lack of time and competencies as well as discomfort when assessment is very sensitive, were reported.
Conclusions: Evidence regarding conversational tools' effectiveness and performance is limited. More is known about the acceptability of conversational tools, which is generally highly acceptable among women and health care professionals. Some unintended consequences of the use of included conversational tools were identified.

Background

Psychosocial vulnerability during pregnancy is associated with increased mortality and short- and long-term morbidity for both mothers, children (de Graaf et al., 2013; Harron et al., 2021; Kramer et al., 2000; Norhayati et al., 2015) and fathers (Paulson and Bazemore, 2010; Livingston et al., 2021). Psychosocial vulnerability may adversely affect parent-child attachment and parental competence (Kramer et al., 2000; Talge et al., 2007). In this review, we apply the definition of psychosocial vulnerability in pregnancy, which has been suggested by Scheele et al. (2020, p. 5) as being "threatened by physical, psychological, cognitive and/or social risk factors in combination with lack of adequate support and/or adequate coping skills".

Early identification of psychosocial vulnerability among expectant parents coupled with targeted supportive interventions is crucial for families' well-being (Harron et al., 2021), and early identification of

* Corresponding author at: Department of Health Science and Technology, Selma Lagerløfs Vej 249, Gistrup 9260, Denmark.
E-mail address: pernillegj@dcm.aau.dk (P. Gram).
[1] Shared first authorship. These two authors contributed equally to this work.

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psychosocial vulnerability factors in maternity settings is recommended by health authorities (e.g., Highet, NJ and the Expert Working Group and Expert Subcommittees (2023); National Institute for Health and Care Excellence (2020); The Danish Ministry of Health (2021); World Health Organization (2022)). Recommendations often entail introduction of routine antenatal psychosocial assessment programmes which assess vulnerability by identifying several psychosocial vulnerability factors known to increase risk of adverse pregnancy and birth outcomes (Biaggi et al., 2016; Braveman et al., 2010; Goldenberg et al., 2008; Kim et al., 2018; Norhayati et al., 2015). These programmes are sometimes complemented by protective factors assessment (de Groot et al., 2019; Scheele et al., 2020).

Antenatal programmes frequently involve use of structured assessment tools which enable the collection of questionnaire data either face-to-face by a health care professional (HCP) (e.g., Austin et al. (2013)) or data self-reported by women/parents before their first antenatal visit (e.g., Quispel et al. (2012)). The validated structured tool ANRQ (Austin et al., 2013) is recommended for psychosocial risk assessment in Australia (Highet, NJ and the Expert Working Group and Expert Subcommittees, 2023) due to its high acceptability among both HCPs and expectant parents (Austin and Kingston, 2016; Venkatesh et al., 2016), and high performance in identification of specific vulnerability factors has been documented.

However, studies indicate that structured tool usage may cause potential harm and unintended consequences. Specifically, expectant parents in psychosocially vulnerable positions exposed to structured assessment tools may face negative experiences (de Groot et al., 2018). Prior research found that limited time at the antenatal consultation can lead to women in vulnerable positions experiencing lack of trust in the HCP and being less likely to share relevant information during depression screening (Forder et al., 2020; Mule et al., 2022). A recent study discovered that structured modes of psychosocial assessment do not always sufficiently allow for a woman-centred approach and thus hinder a trustful, relational approach (Andersen et al., 2023). Other studies have found that some women feel uncomfortable reporting sensitive information if HCPs are incapable of giving sufficient follow-up on structured questions in an empathic manner or if the women feel judged (Johnsen et al., 2018). Establishing a trusting, non-judgemental relationship is thus crucial to overcoming barriers related to psychosocial risk assessment (Jakobsen and Overgaard, 2018).

A relational approach focusing on building trustful midwife-parent relationships is found to be essential for psychosocial assessment (Andersen et al., 2023) for women/parents to feel safe to share sensitive information about their challenges and vulnerabilities (Mule et al., 2022). Continuity of carer and open communication is important in the establishment of trustful midwife-woman/parent relationships (Kirkham, 2010). Mule et al. (2022), along with others, underscores the importance of undertaking not just one but multiple psychosocial assessments during the antenatal period, as women/parents may not have developed the necessary trust in their midwife to feel safe to share sensitive information during their first antenatal consultation. Nonetheless, ensuring such continuity of carer may not always be feasible across all clinical settings (Mule et al., 2022).

There is growing interest in face-to-face modes of assessment tools that support a trustful parent-professional relationship by adopting a more open-ended and conversational manner than structured approaches (Armstrong and Small, 2010; Brealey et al., 2010; de Groot et al., 2019) especially when assessing expectant parents in vulnerable positions (de Groot et al., 2018; Mule et al., 2022) or those with minority backgrounds (Highet, NJ and the Expert Working Group and Expert Subcommittees, 2023). A conversational approach is often preferred by expectant parents in vulnerable positions (Bayrampour et al., 2017; Mule et al., 2022; Svavarsdottir, 2010). This may be due to a better relational approach fostering trust between parents and HCPs (Kirkham, 2010) which supports open dialogue about parents' resources (Bayrampour et al., 2017) while establishing a person-centred approach (Morgan and Yoder, 2012). Hence, conversational psychosocial assessment tools contain potential for parents to feel safe and secure enough to engage in a dialogue about potential challenges thus aiding in better identification of relevant vulnerability factors and preventing adverse maternal and infant outcomes (de Graaf et al., 2013; Harron et al., 2021; Kramer et al., 2000; Norhayati et al., 2015; Talge et al., 2007).

A review by Johnson et al. (2012) examined the performance of psychosocial assessment tools including sensitivity and specificity; however, this review focuses on structured tools exclusively. Strong emphasis on structured and validated psychosocial assessment tools is also reflected in the literature search that informed the Australian guidelines for Mental Health Care in the Perinatal Period published in 2017 (Austin et al., 2017) (updated in 2023 (Highet, NJ and the Expert Working Group and Expert Subcommittees, 2023)) which investigated the performance and acceptability of these tools. While these reviews contribute to the comprehension of psychosocial assessment tools, a knowledge gap exists regarding tools adopting a conversational mode in order to identify multiple dimensions of psychosocial risks and protective factors. For example, only one conversational assessment tool, Kimberly Mum's Mood Scale (KMMS) (Marley et al., 2017), is included in the literature search for the Australian guidelines (Highet, NJ and the Expert Working Group and Expert Subcommittees, 2023). The recognition of conversational assessment tools' potential crucial impact is hence inhibited by lack of synthetised evidence. Such knowledge – including evidence on effectiveness, performance, user/professional acceptability and potential harmful effects (Bonell et al., 2015) – is important for securing safeness of assessment and screening interventions (Sekhon et al., 2017; Skivington et al., 2021; Sagan et al., 2020). When effective, performative, acceptable and safe assessment cannot be guaranteed due to lack of evidence synthesis, a risk of inadequate detection and support is present.

Given increasing recognition of conversational psychosocial assessment tools, an overview of existing conversational tools can contribute to the limited knowledge base of psychosocial assessment tools and facilitate informed decisions about appropriate tools and approaches to identify psychosocial vulnerabilities among expectant parents without inducing harm.

Overall objective

We aimed to conduct a systematic review to provide an overview of antenatal psychosocial assessment tools utilising a conversational mode of assessment and identifying their characteristics as well as synthesising existing knowledge pertaining to their effectiveness, performance, acceptability and unintended consequences.

Methods

A mixed-method approach to this systematic review was undertaken as both quantitative and qualitative evidence were relevant to the study's objectives. The review was conducted in compliance with the Joanna Briggs Institute (JBI) methodology for mixed-methods systematic reviews (Lizarondo et al., 2020) and PRISMA guidelines (Page et al., 2021). The protocol was registered with PROSPERO (reg. no. CRD42022383836).

Search strategy

The following six databases were systematically searched: CINAHL, Embase, PubMed, PsycInfo, the Cochrane Library and Scopus. Cochrane Library was searched solely for reference screening. The search commenced in December 2022 and was completed on December 15, 2022.

The search strategy was developed in collaboration with two university librarians and based on preliminary searches which aimed to identify the most relevant terms that would fulfil our research aim. The

search strategy included thesaurus terms and text searches related to three baseline facets: Assessment tool (intervention), pregnancy and maternity care (population) and psychosocial vulnerability (intervention focus). To achieve consistency in the search across databases, overall terms for each facet and corresponding thesaurus terms and text searches in each database were identified. The search strategy was adjusted for each database. No restrictions were applied. Complete search strategy is given in supplementary file 1.

Eligibility criteria

Criteria for inclusion and exclusion of scientific articles are given in Table 1.

Study selection

All retrieved references were imported to ProQuest RefWorks (RefWorks, 2024) to remove duplicates. The remaining references were transferred to Rayyan software (Ouzzani et al., 2016) and screened by two independent reviewers according to eligibility criteria. Titles and abstracts were screened followed by full-text reading of relevant references. Disagreements regarding eligibility were resolved through research team discussion until consensus was reached.

Quality assessment

Methodological quality of all included studies was assessed by one reviewer who used the relevant JBI critical appraisal tools in accordance with the study design (Campbell et al., 2020; Lockwood et al., 2020; Moola et al., 2020; Munn et al., 2015). Each assessment was discussed with another reviewer to reach consensus. As this article strives to provide an overview of existing psychosocial assessment tools and their characteristics, low methodological quality of identified articles was not an exclusion criterion. The results of the quality assessment were used in the synthesis of conversational assessment tools' effectiveness, performance, acceptability and unintended consequences to give appropriate weight to the knowledge. Results of the quality assessment are displayed in Table 2 as a quality assessment score, reflecting the proportion of quality criteria met from the applied JBI critical appraisal tools.

Data extraction and synthesis

Data extraction was supported by NVivo Software Version 10 (Lumivero, 2024) ensuring transparency and systematism. The first two authors collaboratively extracted the following data from the included articles: assessment tool characteristics including mode of assessment, number of items, psychosocial domains, evaluation method, involvement and presence of partners, time consumption, profession of the provider(s) and competency/training requirements. The authors additionally extracted data on the tools':

1. Acceptability cf. Sekhon et al.s (2017) theoretical framework.
2. Performance regarding identification of expectant parents with psychosocial vulnerability factors and support needs (percentage-wise and discriminative ability; sensitivity, specificity, and area under the curve) as well as determining the referral rate of expectant parents to supportive interventions based on this assessment (percentage-wise).
3. Effectiveness on pregnancy- and birth outcomes.
4. Potential unintended consequences.

Data from quantitative studies were extracted regardless of the statistical significance of the results as recommended by JBI (Lizarondo et al., 2020) thus allowing for identification of potential inconsistencies in the literature during the integration of findings. Extracted data from qualitative studies primarily consisted of themes and sub-themes, quotes and field notes.

Data were synthesised in line with the convergent integrated approach to mixed-methods systematic reviews (Lizarondo et al., 2020). To allow for integration of qualitative and quantitative data in the analysis and presentation hereof, data were prepared for synthesis by 'qualitising' (Pope et al., 2007) quantitative data, i.e., through thematic analysis as informed by Pope et al. (2007). Quantitative data were transformed into qualitative format by making textual descriptions of quantitative results related to the review objective. Qualitative and qualitised data were then integrated and simultaneously synthesised through thematic analysis (Pope et al., 2007) and entailed coding the qualitative and qualitised data concurrently and uniformly. Codes were arranged into descriptive themes and sub-themes. Codes on conversational assessment tools' effectiveness, performance, acceptability and unintended consequences were then synthesised within each individual tool. Afterwards, a final synthesis was conducted across all tools and presented as the results.

Table 1
Inclusion and exclusion criteria.

Characteristics	Inclusion criteria	Exclusion Criteria
Study characteristics		
Population	Expectant mothers/fathers/parents and/or HCPs	No expectant mothers/fathers/parents or HCPs
Intervention	Tools to assess psychosocial vulnerability factors with a conversational mode of assessment	Exclusively diagnostic tools, e.g., Edinburgh Postnatal Depression Scale (EPDS) (Cox et al., 1987)
Intervention focus	Multiple dimensions of psychosocial risk and/or protective factors for adverse pregnancy and birth outcomes	Unidimensional vulnerability, e.g., solely focus on violence
Time of intervention	Prenatal or perinatal	Entirely postnatal
Study design	Primary research including qualitative, quantitative, and mixed-methods studies	Non-empirical studies and reviews
Report characteristics	English or Danish language; Peer-reviewed	Other languages; Non-peer-reviewed literature

Results

Study details

The systematic literature search identified unique 5.394 articles of which 20 met the outlined eligibility criteria. A flow chart of the selection process is displayed in Fig. 1.

Study details and methodological quality assessment score are shown in Table 2. This table also reports the methodological quality assessment of the included studies. Assessments of the qualitative studies/components in mixed-method studies were generally characterised by having few exceptions in quality assessment score and moderate/high rigour, credibility and relevance. Exceptions were primarily related to limited reflexivity. Hence, there is a substantial amount of credible qualitative studies and thus rich and deep insight into HCPs and parents' experiences with conversational assessment tools specifically regarding acceptability and potential unintended consequences.

The quantitative studies show greater variation in quality. Validity criteria generally lowers quality, as psychosocial vulnerability has been found difficult to achieve valid measures with conversational tools. In many studies, potential confounding is not addressed. Thus, the evidence base for effectiveness and performance as well as quantified acceptability is limited. No RCTs were identified and causality between conversational psychosocial assessment and maternal and infant outcomes has not been established in this field.

Table 2
Study details and quality assessment.

Author (year); Setting; Tool	Aim	Design	Participants	Methods	Study findings	Quality assessment score*
Carlin et al. (2020); Australian remote health service; KMMS	To examine user acceptability in line with the implementation of KMMS.	Qualitative	HCPs ($N = 8$) and Aboriginal women ($N = 10$) with high socio-economic status	Individual interviews with all participating HCP's and women. The HCP's responded to a qualitative survey. The women did not undergo clinical KMMS but evaluated it on paper. Thematic analysis strategy was applied.	Most health care professionals did not use the psychosocial assessment part of KMMS partly due to time constraints and the perception that it was only relevant for women with low health literacy. In contrast, the women found it to be a valuable tool and believed it could enhance well-being.	7/10 (1/10 unclear)
Carlin et al. (2021); Australian remote health service; KMMS	To examine the psychosocial risk and protective factors identified through KMMS.	Mixed-method: quantitative and qualitative document analysis	HCPs and Aboriginal women	Document analysis of 91 clinical completed KMMS forms with notes from HCP. Researchers tallied the number and type of risk/protective factors and assigned a risk profile based on the HCP notes analysed with qualitative content analysis approach.	Women at high risk had fewer protective factors than women outside of risk (11–33 % vs. 61–100 %) and increased risk factors compared to women outside of risk (22–67 % vs. 6–28 %). The average of protective factors decreased with increasing risk profile (4.9 (SD 1.1) vs. 1.6 (SD 1.3)), and conversely with risk factors (1.1 (SD 1.1) vs. 3.8 (SD 1.0)).	Qualitative part: 8/10 (1/10 unclear) Quantitative part: 5/8
Chambers et al. (2022); Australian hospital; SAFE START	To compare the performance of SAFE START and a structured tool (ANRQ-R). (Cost-effectiveness was also evaluated but not reported as it does not fit the scope of this review.	Cohort	Pregnant women ($N = 6805$)	$N = 3673$ women were assessed with SAFE START and EPDS. $N = 3132$ women were screened with ANRQ-R and EDPS. Assessments were subsequently clinically evaluated by midwives. Presence of depressions symptoms on EPDS and psychosocial risks generated an "at-risk"-label. Threshold values were established to determine whether women received an "at-risk" label. Performance was evaluated based on midwives' approval of the "at-risk"-label as the reference.	SAFE START marked more women as 'at risk' than ANRQ-R (37% vs. 27 %). Sensitivity was highest with SAFE START (0.82 (CI 95 % 0.79; 0.85) vs. 0.78 (CI 95 % 0.75; 0.81)). Specificity was highest with ANRQ-R (0.89 (CI 95 % 0.87; 0.9) vs. 0.74 (95 % CI 0.72; 0.75)). Positive predictive value was lower with SAFE START (0.41 (CI 95 % 0.39; 0.44) vs. 0.69 (CI 95 % 0.65; 0.72)). Negative predictive value was nearly the same (SAFE START 0.95 (CI 95 % 0.94; 0.96) vs. ANRQ-R 0.93 (CI 95 % 0.92; 0.94)). ANRQ-R was better at excluding women who were not 'at risk' (Youden's Index (J) ANRQ-R 0.67 vs. SAFE START 0.57).	7/10 (1/10 unclear)
Forde et al. (1992); Norwegian general practice; The Psychosocial Questionnaire	To describe the tool and evaluate information gathered with use of the tool compared with standard care (The Antenatal Care Form).	Cross-sectional	Pregnant women ($N = 65$)	A general practitioner (study author) filled out a tool form (semi-structured question guide with two separate parts) at first and second antenatal consultation. Order and wording of questions were individualised and conversational. Answers were dichotomized (problems/no problems). Retrospective assessment based on standard care was made to compare the two approaches and to evaluate whether The Psychosocial Assessment tool provided additional information.	$N = 32$ additional women were identified with psychosocial problems vs. standard care. The 6 women identified with standard care were also identified with part 1 of the questionnaire. Antenatal emotional problems were the most frequently reported problems.	2/9 (1/9 unclear)

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Table 2 (*continued*)

Author (year); Setting; Tool	Aim	Design	Participants	Methods	Study findings	Quality assessment score*
Forde (1993); Norwegian general practice; The Psychosocial Questionnaire	To investigate associations between pregnant women's psychosocial condition – assessed with the tool – and premature- and birth weight of the child.	Cohort	Pregnant women ($N = 65$)	The Psychosocial Questionnaire was distributed by a general practitioner (study author) two times antenatally. Based on the assessment, exposure was the risk profile and outcome was birth weight of the child. 41/65 women were identified as not needing support (coping group). 24/65 women were identified as needing support (observation group). At the second assessment, 11/24 women in the observation group demonstrated ability to manage issues throughout the pregnancy, and observation group was reduced to 13 women.	Observation group ($n = 24$) gave birth to children with lower gestational weight than coping group (3263 g vs. 2608; p=.03). The 13/24 women who were still assessed as in problematic psychosocial conditions at the second assessment gave birth to children with even lower gestational weight than the rest (2950 g vs. 2614; p=.01).	5/11 (1/11 N/A; 1/11 unclear)
Kohlhoff et al. (2016); Australian private hospital; PMAP	To report demographic, psychosocial and obstetric characteristics and their correlations with depression symptoms among women giving birth at private hospitals. To report number of referrals made based on PMAP.	Cross-sectional	Pregnant women ($N = 993$)	The pregnant women were assessed with PMAP (psychosocial assessment and EPDS screening). At the last antenatal consultation, an obstetrician was informed if a midwife had identified mental health problems (either by the psychosocial assessment and/or EPDS>13) or with major psychosocial risks. Referral to supportive interventions for women in need were clinically made.	Information was passed on to an obstetrician in 94 cases (9.5 %) as a result of PMAP assessment. 9 % women were referred to supportive interventions, including 37 cases to social workers, 50 cases to other services and 3 cases to both social workers and other services.	6/8
Kohlhoff et al. (2021a); Australian private hospital; PMAP	To explore HCP's perspectives on PMAP.	Qualitative	HCPs ($N = 12$)	HCP's participated in either focus group interview or individual interview. Thematic analysis strategy was applied.	Five main themes were identified: 1) Immediate benefits to women (identifying women at risk; referrals to support services; supporting and educating women) 2) Enhanced overall quality of care at the hospital 3) The dilemma of partners attending; 4) Factors that make the programme successful 5) Recommendations for improvement	7/10 (1/10 unclear)
Kohlhoff et al. (2021b); Australian private hospital; PMAP	To explore women's perspectives on PMAP.	Qualitative	Mothers formerly assessed with PMAP ($N = 20$)	Individual interviews. Thematic analysis based on an essentialist-realist theoretical frame was conducted.	Five main themes were identified: 1) Increased awareness and support for perinatal mental health issues 2) Enhanced quality of care provided at the hospital 3) Experience with the midwife impacts perceptions of the program 4) Partners 5) Preparation for the programme.	8/10 (1/10 unclear)
Kohlhoff et al. (2022); Australian private hospital; PMAP	To evaluating PMAP.	Mixed-methods: cohort and qualitative.	Pregnant women ($N = 485$)	Clinical notes from PMAP assessment (psychosocial assessment and EPDS screening) of $n = 485$ women were collected.	4.1 % of women were screened as positive for depression on EPDS. 19 % were identified with risk factors for or with mental	Qualitative part: 7/10 (1/10 unclear) Quantitative part: 6/11

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Table 2 (*continued*)

Author (year); Setting; Tool	Aim	Design	Participants	Methods	Study findings	Quality assessment score*
				Interviews were conducted with $n = 341/485$ 10 weeks postpartum and 316/485 nine months postpartum and analysed through thematic analysis approach.	health problems based on the psychosocial assessment. 13 % were referred to supportive interventions. 93 % women thought PMAP was helpful. 98 % recommend it. Nine-month follow-up showed decrease in depression symptoms regardless of whether the women were identified with psychosocial risks or not the group of women identified with risks showed the greatest decrease.	
Marley et al. (2017); Australian remote health service; KMMS	To examine the validity and acceptability of KMMS.	Mixed-methods: cross-sectional and qualitative	Pregnant women ($N = 97$) and HCPs ($N = 9$)	The pregnant women were assessed with KMMS and assigned a risk-profile: non, low, moderate or high. 91/97 women subsequently participated in a clinical diagnostic interview cf. DSM-4 (reference). 81/97 participated in a survey. The HCPs participated in a survey and qualitative interview analysed using thematic analysis strategy.	Validity: AUC=0.90 (0.83–0.97); sensitivity=0.83(0.61–94); specificity=0.87(76–93); PPV=67.9 %; NPV=93.7 %; Correct risk classification=85.7 %. Acceptability: women found KMMS easy and usable. HCPs found it more useful than using depression screening (through EPDS) alone. The psychosocial assessment let professionals ask questions which gave the women opportunity to express themselves, leading to a deeper understanding between the professional and women. Some women and professionals expressed, however, that they have had negative experiences.	Qualitative part: 7/10 (1/10 unclear) Quantitative part: 5/8 (1/8 N/A)
Munro et al. (202~~,1~~12); USA, urban hospital-based clinic; Prenatal EHC	To explore Black women's acceptability and experiences with the tool.	Qualitative descriptive	Black pregnant women ($N = 30$)	Individual interviews. Data were analysed using the constant comparative method.	Three main themes centered around the tool's enhancement of communication, were identified: 1) "An opening" for disclosure, 2) "An understanding with you", 3) A way for providers to "know you, your life and future plans."	8/10
Quispel et al. (2014a); Dutch hospital in deprived area; R4U	To describe the development and implementation (including performance) of a comprehensive maternity intervention, where vulnerability assessment with use of R4U as well as a structured assessment tool, M2C was incorporated.	Implementation study: Cross-sectional	Pregnant women ($N = 236$)	Implementation period lasted 5 months in a rural hospital. The pregnant women were followed and assessed with R4U at their first antenatal consultation. Performance was investigated in accordance with the planned intervention protocol and examined drop-out rates including drop-out causes and distribution of psychosocial risks among women dropping out of the intervention.	79 % of the women were assessed with R4U. 21 % were not assessed. In half of these non-assessed cases, lack of assessment was due to HCPs lacking time to fill-out R4U. In the remaining 50 % of the cases, women could not see the benefits of being assessed and getting the opportunity for referral to supportive interventions.	4/9 (3/9 unclear)
Quispel et al. (2014b); Dutch midwifery practices; R4U	To examine whether a HCP provided approach to psychosocial assessment (R4U) or a structured self-reported assessment tool (M2C) is the best method to identify psychopathological	Cohort	Pregnant women ($N = 164$)	The pregnant women were assessed with both tools and then participated in a survey. Data on birth outcomes from $n = 115$ was	Inter-test agreement on a single PPS was equally distributed among the tools. M2C identified more psychosocial risk factors. Women were satisfied with both tools (>75 % satisfied,	6/11 (1/11 unclear)

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Table 2 (*continued*)

Author (year); Setting; Tool	Aim	Design	Participants	Methods	Study findings	Quality assessment score*
	and psychosocial factors (PPS), as well as drug use in pregnancy, which is associated with adverse birth outcomes.			retrieved via medical records.	14 % no opinion). The advantages of M2C consisted of fast, digital assessment which was easy to use and had understandable questions. Advantages of R4U consisted of its face-to-face character and number of questions and clarity of questions. More women preferred M2C as an assessment tool to identify psychosocial risks. Proportion of small gestational age, assisted birth, pain relief during birth and birth complications among women increased with increased risk score on both tools.	
Rollans et al. (2013a); Australian hospital and home visits; SAFE START	To explore women's experiences with psychosocial assessment (with SAFE START) and depression screening (with EPDS).	Qualitative ethnographic	Pregnant women ($N = 34$) and their midwives and health visitors	Observations of 34 antenatal midwifery consultation with a total of $n = 18$ different midwives were conducted. Observations of 20/34 of the women's postpartum home visits with a total of $n = 13$ different health visitor were conducted. Individual interviews were conducted with all women. Data was analysed using thematic analysis strategy.	Five main themes were identified. Three of the themes described the impact that assessment had on women: 1) Unexpected-a bit out of the blue, 2) Intrusive-very personal questions, 3) Uncomfortable-digging over that old ground. Two of the themes described how the approach taken by HCPs during assessment influenced their experience and disclosure: Approach-sensitivity and care and being watched.	9/10 (1/10 unclear)
Rollans et al. (2013b); Australian urban hospital-based clinic; SAFE START	To describe the content and process of clinical psychosocial assessment using SAFE START and depression screening (EPDS) undertaken by midwives.	Qualitative ethnographic	Pregnant women ($N = 34$) and midwives ($N = 18$)	Observations of antenatal consultations with 34 pregnant women and a total of $n = 18$ midwives were conducted. Field notes were conducted using a structured observation guide, focused on the professional's approach and communication style, dynamics between the midwife and woman. Midwives participated in a short interview after observations of consultations. Data were analysed using a content analysis strategy.	Findings included insight into processes around the greeting at the first consultation, commencing the booking visit, introduction of the overall visit and psychosocial assessment questions, delivery of the psychosocial questions, midwives' approach and style, midwives' response to positive answers (risk factors) and debriefing. Midwives' approaches varied. Some had a structured approach while others were more flexible. A flexible approach contributed to mutual exchanges between the woman and midwife and collaborative approaches to decision making and problem-solving. In some cases, the midwife modified the questions, which seemed to clarify the questions. Some midwives "softened" sensitive questions to minimise impact on the woman.	7/10 (1/10 unclear)
Rollans et al. (2016); Australian local health districts; SAFE START	To explore how HCPs includes partners who participate in antenatal and postpartum consultations.	Qualitative	Pregnant women ($N = 34$), midwives and health visitors ($N = 29$ for observations,	54 observations were conducted (34/54 during antenatal consultations with psychosocial assessment and 20/54 during postpartum home	Four main themes were identified: 1) Negotiating partner exclusion, 2) Partial inclusion, 3) Women's business or a couple	7/10 (1/10 unclear)

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Table 2 (*continued*)

Author (year); Setting; Tool	Aim	Design	Participants	Methods	Study findings	Quality assessment score*
			unspecified for group discussions)	visits). 60 individual interviews with women and 7 group discussions with 10–30 midwives and health visitors were conducted. Data were analysed using thematic analysis strategy.	concern?, 4) They know anyway.	
Schmied et al. (2020); Australian urban maternity hospital; SAFE START	To explore midwives' perspectives on two different maternity models of care which includes psychosocial assessment and depression screening (SAFE START vs. PIPA (which includes a structured psychosocial assessment tool, ANRQ-R)).	Mixed-methods: cross-sectional and qualitative	Midwives ($N = 26$ in phase 1, $N = 27$ in phase 2, $N = 16$ for focus groups)	Survey with midwives during two phases. $N = 26$ participated in phase 1 where only SAFE START was provided clinically. $N = 27$ participated in phase 2 where PIPA/ANRQ-R was clinically provided). Two focus group interviews with a total of $n = 16$ midwives were conducted during phase 2. Triangulation of quantitative and qualitative data was made.	Midwives supported psychosocial assessment and overall felt comfortable. A greater proportion of midwives expressed favourable views on the PIPA/ANRQ-R model. A greater proportion of midwives conducted the ANRQ-R assessment mainly- or completely verbatim cf. the tool-guide (ANRQ-R 44.4% vs. SAFE START 12 %; p=.23).	Qualitative part: 7/10 (1/10 unclear) Quantitative part: 5/8 (1/8 N/A)
Van Veen et al. (2015); Dutch midwifery practices and hospitals; R4U	To examine the feasibility and reliability of R4U.	Diagnostic accuracy test through a cohort and cross-sectional design.	Pregnant women ($N = 1096$ for feasibility part, $N = 133$ for reliability-part), HCPs ($N = 46$)	Feasibility part: The women were assessed with R4U at their first antenatal consultation. Use of time as well as missing items overall and at client level was measured as outputs. Reliability part: women participated in a test-retest and was assessed again with R4U at second antenatal consultation. Acceptable threshold for items was predefined as 80 % inter-rater reliability (IRR). Acceptable threshold for the sum of items (domains) was predefined as ± 15 % margin.	Feasibility: Time use was <5 min at 63 % of the consultations and 5–10 min at 33 % of consultations. There were missing items in 0.2 % of the consultations. 1/77 of the items had a missing rate of 410 %. Reliability: 20 % of single items had 100 % IRR. 68 % of single items had 80–99 % IRR. 13 % of single items had below the predefined 80 % IRR. The sum of items (domains) differentiated below the predefined ± 15 % margin.	Cross-sectional: 6/9 (3/9 unclear) Diagnostic test accuracy: 8/10 (1/10 N/A)
Wilkinson et al. (1998); USA, Maternity clinics servicing low-income citizens; CPSP	To investigate associations between receiving a minimum rate of psychosocial assessments and adverse birth outcomes.	Cohort	Low-income pregnant women who had received at least one psychosocial assessment ($N = 3467$)	Medical recording data from $n = 3467$ women from low-income women, across 27 maternity clinics who had received a minimum of 1 psychosocial assessment. A "psychosocial service indicator" was calculated by dividing number of psychosocial assessments with number of trimesters in which the woman received antenatal care. Women with an indicator score of ≥1 were considered as having received sufficient psychosocial service. Women with an indicator score of<1 were considered as having received insufficient psychosocial service. Outcomes were preterm birth and/or low birth weight.	49 % women received sufficient psychosocial service. Odds for preterm birth and low birth weight among women who received sufficient psychosocial service were significantly lower than women who received insufficient psychosocial service (Preterm birth: OR=0.53; CI95 %=0.40–0.72; Low birth weight: OR=0.49; 95CI %=0.34–0.71).	10/11 (1/11 N/A)

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Table 2 (*continued*)

Author (year); Setting; Tool	Aim	Design	Participants	Methods	Study findings	Quality assessment score*
Yi et al. (2008); USA, Urban hospital-based clinics; Prenatal EHC	To explore which psychosocial vulnerability factors Black women experience as influencing pregnancy, which themes/ questions are relevant for antenatal assessment of support and identification of relevant psychosocial domains for the development of an event history calendar (EHC) for Black women in the prenatal period.	Qualitative	Black pregnant women ($N = 22$)	3 focus group interviews with Black, pregnant women. Data were analysed using constant comparative method.	Five themes related to psychosocial risks was identified and used to develop categories for the EHC: Relationships, Stress, Routines, Health history perceptions, Beliefs.	7/10 (1/10 unclear)

* Based on the relevant JBI critical appraisal tools in accordance with study design.

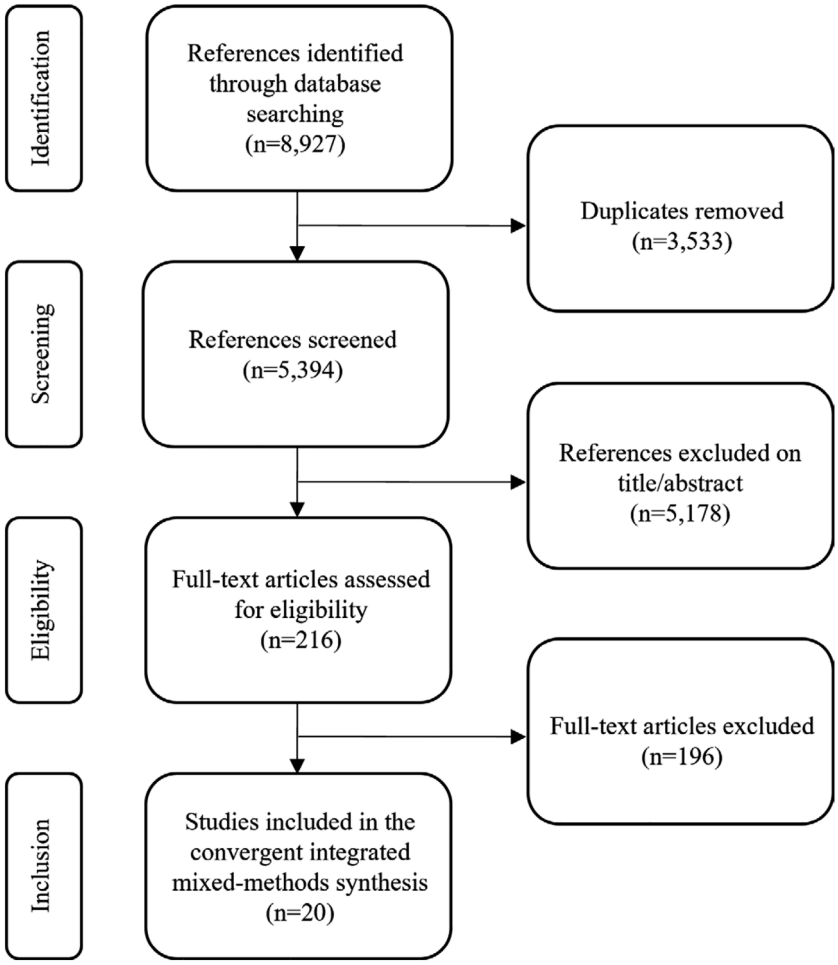

Fig. 1. Flowchart.

Characteristics of tools

Of 20 studies, seven unique assessment tools were identified. Four tools adopt an overall conversational mode of assessment: The Pre-admission Midwife Appointment Program (PMAP), Kimberly Mum's Mood Scale (KMMS), Prenatal Event History Calendar (Prenatal EHC) and The Psychosocial Questionnaire.

Three tools adopt a mixed mode of assessment, i.e., a combined method of conversational and structured approach, e.g., a structured interview guide which the HCP must use within an open enquiry: SAFE START, The Rotterdam Reproductive Risk Reduction Risk Score Card (R4U) and Comprehensive Perinatal Services Program (CPSP). Table 3 shows the tool characteristics.

Synthesis

In Table 4, the data extraction on the review objective areas – i.e., effectiveness, performance, acceptability and potential unintended

Table 3
Tool characteristics.

Tool and country	Mode of assessment	Items (number)	Domains of psychosocial risk and/or protective factors	Evaluation method	Partner presence (involvement)	Time consumption	Profession	Competency/ training requirements	Studies
PMAP (The Pre-admission Midwife Appointment Program) Australia	Semi-structured interview guide	13	Support, Recent life stress, Personality, Mental health history, Family psychiatric history, Negative childhood experiences, Domestic violence, Substance use	Clinical assessment	Partner can be present during assessment (W/m)	45 min	M	ü	Quantitative: Kohlhoff et al. (2016) Qualitative: Kohlhoff et al. (2021a; 2021b) Mixed-method: Kohlhoff et al. (2022)
KMMS (Kimberley Mum's Mood Scale) Australia	Semi-structured interview guide. Visual form with risk and protective factors filled in jointly by woman and HCP	6 primary with sub-questions	Support, Stressors, Self-esteem, Relationships, Childhood experiences, Mental health including substance use	Clinical assessment	Not specified (W)	30–60 min	M, HV, GP, N, PSY	ü	Qualitative: Carlin et al. (2020) Mixed-method: Carlin et al. (2021); Marley et al. (2017)
Prenatal EHC (Prenatal Event History Calendar) USA	Semi-structured interview guide. Visual form (calendar) with risk and protective factors which is filled in jointly by women and HCPs continuously in the prenatal period	14 primary with sub-questions	Age, Past medical history, Pregnancy history, Nutrition, Routines, Family and relationships, Living arrangements, Environment, Neighbourhood, Beliefs, Stressors, Discrimination, Significant events, Risk behaviours	Clinical assessment	Not specified (W)	10–15 min + discussion (not specified) pr assessment	Other		Qualitative: Munro et al. (2012); Yi et al. (2008)
The Psychosocial Questionnaire Norway	Semi-structured interview guide with open-ended and close-ended questions	23	Attitude towards the pregnancy; Social network; Well-being; Earlier pregnancies; Problems with child's/ children's health	Clinical assessment	Not specified (W)	Not specified	GP		Quantitative: Forde (1993); Forde et al. (1992)
SAFE START Australia	Semi-structured interview guide with open-ended and close-ended questions	21	Lack of support; Recent major stressors in the last 12 months; Low self-esteem; History of anxiety, depression or other mental health problems; Couple's relationship problems or dysfunction; Adverse childhood experiences; Domestic violence;	Clinical assessment	Multiple models for presence of partner* (W)	20 min	M	ü	Quantitative: Chambers et al. (2022) Qualitative: Rollans et al. (2013b; 2013c; 2016) Mixed-method: Reilly et al. (2017)†; Schmied et al. (2020)

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Table 3 (*continued*)

Tool and country	Mode of assessment	Items (number)	Domains of psychosocial risk and/or protective factors	Evaluation method	Partner presence (involvement)	Time consumption	Profession	Competency/ training requirements	Studies
R4U (The Rotterdam Reproductive Risk Reduction risk score card) The Netherlands	Interview guide with close-ended questions. HCP is instructed to ask items as open questions and to interview in depth	77	Opportunity to disclose further Psychosocial and economic; Communication and ethnicity; Pregnancy onset; Lifestyle; Medical; Obstetric	Numeric score system	Partner can be present during assessment (W)	5–10 min	M, O, G, N		Quantitative: Quispel et al. (2014a; 2014b); van Veen et al. (2015)
CPSP (Comprehensive perinatal services program) USA	Assessment form filled by HCP which should be discussed jointly between woman and HCP and repeated throughout the antenatal period.	Not specified	Social support system; Personal adjustment to pregnancy; History of previous pregnancies; Patient's goals for herself in the pregnancy; General emotional status and history; Wanted or unwanted pregnancy, acceptance of the pregnancy; Substance use and abuse; Housing and household composition; Education and employment; Financial and material resources.	Clinical assessment	Not specified (W)	Not specified, but five hours in total throughout the antenatal period (including counselling)	N, Other, Lay	**ü**	Quantitative: Wilkinson et al. (1998)

† = protocol;.

* Multiple models for presence of partner = In some settings, the partner can be present at the consultation but can be asked to leave during assessment. In other settings the partner can be present during assessment and in some settings the partner always must leave during assessment; *W* = Solely the woman's psychosocial vulnerability is assessed; W/*m* = Assessment is targeted the woman's psychosocial vulnerability, but with few questions regarding partners vulnerability; *M* = midwife; *N* = nurse; HV = health visitor; GP = general practitioner; *O* = obstetrician; *G* = gynaecologist; PSY = psychologist; Other = other HCP; Lay = layman.

consequences – are illustrated on the seven unique assessment tools. Review objective areas will be elucidated in the following sections.

Acceptability among women

Nine studies examined women's acceptability of conversational psychosocial assessment tools and covered five tools: PMAP (Kohlhoff et al. 2021a; 2021b; 2022), KMMS (Carlin et al. 2020; Marley et al. 2017), Prenatal EHC (Munro et al. 2012), SAFE START (Rollans et al. 2013a) and R4U (Quispel et al. 2014a; 2014b). Acceptability was generally high. Women experienced the tools as helpful (Carlin et al., 2020; Kohlhoff et al., 2022), valuable (Munro et al., 2012), contributing to increased trust (Rollans et al., 2013a) and assisting person-centred communication (Munro et al., 2012; Rollans et al., 2013a; Marley et al., 2017). The tools are also associated with great satisfaction (Kohlhoff et al., 2022; Marley et al., 2017; Munro et al., 2012; Quispel, et al., 2014b; Rollans et al., 2013a).

Assessment can lead to negative experiences for some women, i.e., on issues related to intimate partner violence (IPV) (Rollans et al., 2013a), lack of preparation (Kohlhoff et al., 2021a; 2021b) and when HCPs dig into issues of the past which have no present relevance (Rollans et al., 2013a). Acceptability of conversational psychosocial assessment can thus be reduced.

Acceptability among HCPs

Five studies examined HCPs' acceptability of conversational assessment tools and covered four tools: PMAP (Kohlhoff et al. 2021a), KMMS (Carlin et al. 2020; Marley et al. 2017), SAFE START (Schmied et al. 2020) and R4U (Quispel et al. 2014a). Findings were ambiguous. Some studies found that HCPs find a conversational tool highly valuable (Carlin et al., 2020; Marley et al., 2017; Schmied et al., 2020) as it supports providing antenatal care for women (Carlin et al., 2020) by identifying parents in vulnerable positions and referring them to supportive interventions (Kohlhoff et al., 2021a; Marley et al., 2017). Additionally, HCPs find it valuable as it supports relationships with women (Carlin et al., 2020) and provides insight into women's lived experiences (Marley et al., 2017).

Other studies have identified several barriers negatively impacting HCP's acceptability of the tool, including lack of time and insufficient

Table 4
Overview of data extraction on the effectiveness, performance, acceptability and potential unintended consequences of the seven identified conversational assessment tools.

Tool	Acceptability (women)	Acceptability (HCP)	Performance	Effectiveness	Unintended consequences
PMAP	Respectively, 93 % and 98 % find it helpful and recommend it Kohlhoff (2022). However, some women express need to be prepared for the assessment. Lack hereof means that some women can have negative experiences, as they can have other expectations of the antenatal assessment consultation, including the physical examination Kohlhoff et al. (2021b)	HCPs experience that they identify more women with vulnerabilities Kohlhoff et al. (2021a)	19 % of women were identified with risk factors for vulnerability and/or had mental health problems. 13 % of women not already receiving supportive interventions were referred Kohlhoff et al. (2022)	Not assessed by any study	Partner can be present. While some women find this meaningful, others find it suboptimal Kohlhoff et al. (2021b) HCPs express that women should be assessed alone due to need of assessing intimate partner violence Kohlhoff et al. (2021a)
KMMS	Women express safeness and that they like the questions and being able to tell their story Marley et al. (2017). 12 % had negative experiences Carlin et al. (2020)	HCPs find it valuable Carlin et al. (2020), Marley et al. (2017) and that it supports the relationship with the woman as well as management of health care Carlin et al. (2020)	Sensitivity=0.83, specificity=0.87, AUC=0.90 for assessing high risk of perinatal mental health problems against clinical EDPS screening Marley et al. (2017). Women assessed as in high risk had more risk factors and less protective factors than women not assessed as in risk (risk factors=22–67 % vs. 6–28 %; protective factors=11–33 % vs. 61–100 %) Carlin et al. (2021)	Not assessed by any study	Many HCPs do not use the tool fully due to lack of time and competencies Carlin et al., (2020), Marley et al. (2017)
Prenatal EHC	Women enjoy filling out the visual form (calendar), find it valuable that it contains living conditions, past, present and future plans and that the form increases reflection and experiences that it supports communication with HCPs in a patient-centred direction Munro et al. (2012)	Not assessed by any study	Not assessed by any study	Not assessed by any study	Not assessed by any study
The Psychosocial Questionnaire	Not assessed by any study	Not assessed by any study	More women identified with psychosocial problems with use of the tool than not – respectively, 49% vs 9 % Forde et al. (1992). In Forde (1993), 39 % and 20 %, respectively, of women at the first and second antenatal assessment consultation referred to supportive intervention.	Women identified at risk at the antenatal assessment consultation gave birth to significantly smaller children than women identified without risks (without risk: 3263 g vs. at risk: 2608 g, p=.03) Forde (1993)	Not assessed by any study
SAFE START	Some have positive experiences and find it trust building to HCPs, while others find it uncomfortable Rollans et al. (2013a). An empathetic, acknowledging and sensitive approach of HCP is appreciated Rollans et al. (2013a). An ethnographic study showed this might be supported by midwives adopting a flexible and modified approach Rollans et al. (2013b). This approach facilitated mutual exchanges between the woman and midwife, fostering a collaborative approach to decision-making and problem-solving, including the midwife taking time to respond to the woman's answers and explore her concerns Rollans et al. (2013b)	HCPs finds it acceptable, including with regards to benefits for women Schmied et al. (2020). 96 % and 81 %, respectively, are confident in assessment and confidently refer to supportive interventions. 46 %, however, find that time resources are insufficient Schmied et al. (2020)	Sensitivity=0.82, specificity=0.74 for assessing high risk of perinatal mental health problems against un-blinded clinical assessment Chambers et al. (2022)	Not assessed by any study	Some women had negative experiences due to their past being delving into, lack of understanding of the purpose of assessment and questions regarding domestic violence Rollans et al. (2013a). Some HCPs find that some questions are very sensitive and can initiate concerns among women Schmied et al. (2020). Rollans et al. (2016) find variations and dilemmas regarding presence of partners at antenatal assessment consultations. Some HCPs have been in difficult situations, asking partners to leave the room, which have in turn caused frustration and anger among some partners as well as feelings of guilt among the women. Some women preferred that the partner was not present so they could speak more

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Table 4 (*continued*)

Tool	Acceptability (women)	Acceptability (HCP)	Performance	Effectiveness	Unintended consequences
					openly, while others stated that the assessment was also beneficial for the partner.
R4U	In a study comparing R4U to a structured tool, M2C, most favoured the structured tool; however, >75 % were satisfied with both tools (14 % no opinion). Benefits of R4U consisted of face-to-face interaction, the number of questions and clarity of questions. Quispel et al. (2014b).	Not assessed by any study	Proportion of women with negative birth outcomes increases with increased R4U risk score; however, R4U only identified 55 % of women who gave birth to a child with low birth weight Quispel et al. (2014b). A test-retest of R4U was conducted van Veen et al. (2015). Results shows that for individual R4U items, 20 % item had 100 % inter-rater reliability (IRR). 68 % had IRR between 80 and 99 %. 13 % of items fell below the predetermined 80 % accuracy threshold between a first and a second R4U measurement.	Not assessed by any study	In a study by Quispel et al. (2014a) of an integrated maternity programme, using R4U as assessment tool, 21 % women dropped out of the programme at assessment. 50 % of these dropouts were due to HCPs lacking time resources.
CPSP	Not assessed by any study	Not assessed by any study	Not assessed by any study	Women who had one antenatal assessment consultation per trimester as a minimum had significantly lower odds of preterm birth (OR=0.53; 95 % CI=0.40–0.72) and low birth weight (OR=0.49; 95 %CI=0.34–0.71) than women who had fewer consultations Wilkinson et al. (1998). The correlation remained significant after adjusting for covariates.	Not assessed by any study

competency development (Carlin et al., 2020; Marley et al., 2017; Quispel et al., 2014a; Schmied et al., 2020). Some women find the questions in the tools to be very sensitive (Schmied et al., 2020). These factors seem to inhibit HCPs' involvement in routine assessment, as they can contribute to breaching of systematic assessment among expectant parents (Carlin et al., 2020; Quispel et al., 2014a).

Performance

Eight studies examined the performance of conversational tools regarding ability to identify parents in psychosocially vulnerable positions and/or aid decisions regarding referral to supportive interventions and covered five tools: PMAP (Kohlhoff et al. 2022), KMMS (Carlin et al. 2021; Marley et al. 2017), SAFE START (Chambers et al. 2022), The Psychosocial Questionnaire (Forde, 1993; Forde et al. 1992) and R4U (Quispel et al. 2014b; van Veen et al. 2015). Marley et al. (2017) found a unique discriminatory ability in the performance of KMMS when distinguishing women in vulnerable positions. However, the studies' methodological quality was only assessed as low-moderate; hence, well-founded conclusions cannot be drawn as the findings may be subject to bias.

Substantial differences were seen among the tools in relation to how many women were assessed as being at risk and referred to supportive interventions. For example, Forde et al. (1992) found that 49 % of women were identified with psychosocial problems when The Psychosocial Questionnaire was used, while Carlin et al. (2021) found that 9 % of women were assessed as in high-risk with KMMS. This does not necessarily mean that The Psychosocial Questionnaire has better performance. Rather, it is not possible to draw conclusions on the severity of risk factors identified and tool specificity or whether over-identification of risk factors may occur.

Variation in performance might also be influenced by different evaluation methods assessing whether parents are in vulnerable positions. Conversational tools can be characterised by having clinical assessment as the evaluation method. Only R4U has a numeric score system; however, it does not have a defined threshold (van Veen et al., 2015). Assessments of vulnerability are thus predominantly based on clinical judgment. Moreover, there are differences among tools regarding which psychosocial risk/protective factors they include. The basis of evaluation in the various tools is thus not comparable.

Effectiveness

Two studies examined the effectiveness of conversational tools regarding pregnancy/birth outcomes and covered two tools: The Psychosocial Questionnaire (Forde, 1993) and CPSP (Wilkinson et al., 1998). None were RCTs and causality cannot be established. One study had considerable risk of bias with a quality assessment score of 5/11 (1 N/A) (Forde, 1993), while the other was of high quality with a score of 10/11 (1 N/A) (Wilkinson et al., 1998). With mixed-methodological quality and only few studies, the evidence base is too weak to draw well-founded conclusions on effectiveness. The only study of high quality (Wilkinson et al., 1998) showed an association with positive pregnancy/birth outcomes when the tool (CPSP) was used several times antenatally. These positive correlations may only be transferable to tools included in follow-up programmes.

Unintended consequences

Unintended consequences of conversational tools were identified in eight studies and covered four tools: KMMS (Carlin et al., 2020; Marley et al., 2017), PMAP (Kohlhoff et al., 2021a, 2021b), R4U (Quispel et al., 2014a) and SAFE START (Rollans et al., 2013a; 2016; Schmied et al., 2020). These consequences relate to the aforementioned varying acceptability among both women and HCPs, including insecurity among women (Kohlhoff et al., 2021a, 2021b; Rollans et al., 2013a; 2016), insufficient consultation time (Carlin et al., 2020; Marley et al., 2017; Quispel et al., 2014a; Schmied et al., 2020) and competency development (Carlin et al., 2020) among HCPs. The latter impacts whether and to what extent assessment is carried out (Carlin et al., 2020; Quispel et al., 2014a).

Challenges related to partner involvement and presence during conversational psychosocial assessment were found. There is generally limited focus on partner involvement. In some clinical settings, partners may not be present during psychosocial assessment by programme design (Rollans et al., 2016). Some women and HCPs find this better allows women to share information about psychosocial vulnerability (Kohlhoff et al., 2021a, 2021b; Rollans et al., 2016). A potential unintended consequence that comes with a partner's presence during conversational psychosocial assessment can be that the presence inhibits identification of vulnerability factors, including IPV (Kohlhoff et al., 2021a).

Studies on KMMS and SAFE START tools report some women experiencing partner involvement as supportive and relevant for their partner's well-being (Rollans et al., 2016; Kohlhoff et al., 2021b); hence, lack of partner involvement may induce lack of support for these women and failure to identify partners' potential vulnerabilities. Unintended consequences were found in assessment programmes where partners attend antenatal consultation but are asked to leave during the psychosocial assessment as this can lead to discomfort for the woman and frustration/anger for the partner (Rollans et al., 2016). Dilemmas exist regarding whether and how partners should be involved in psychosocial assessment programmes utilising a conversational approach.

Discussion

Our systematic review identified 20 papers reporting characteristics from seven unique antenatal conversational psychosocial assessment tools. Criteria reported included acceptability, performance, effectiveness and unintended consequences, however none of the seven tools had been evaluated using all these criteria.

Pregnant women generally expressed high acceptability which is often linked to experiencing the tool as contributing to more person-centred communication (Munro et al., 2012; Rollans et al., 2013a; Marley et al., 2017) and improved woman-professional relationships (Carlin et al., 2020). This aligns with the idea that structured approaches may hinder woman-centeredness and development of trust (Andersen et al., 2023). The potential of conversational psychosocial assessment tools to support person-centred care and trustful relationships is a key strength that may promote collaboration and engagement.

Person-centred care takes a starting point in individuals' unique life stories (Morgan and Yoder, 2012). This aligns well with a subjective perspective on vulnerability as dependent on individuals' lived experiences and perceived resources. The degree to which routine use of psychosocial assessment tools is combined with a person-centred approach may be crucial to the performance of the tools and parents' experiences with the assessment of psychosocial vulnerability which is important when considering feelings of fear and stigmatisation among expectant parents in vulnerable positions (Frederiksen et al., 2021; Jakobsen and Overgaard, 2018). This highlights the need for attention regarding avoiding harm and unintended consequences when undertaking psychosocial assessment.

Our review shows that professional insecurity related to assessment tools usage and a main focus on risk factors of the past (Rollans et al., 2013a) that may be at odds with the person-centred approach and could cause parents' own perspectives on vulnerability and protective factors to be disregarded. A person-centred approach to antenatal psychosocial assessment is pivotal in enabling midwives to undertake adequate psychosocial assessment and support parents' sense of security and confidence related to sharing sensitive information (Fernandez Turienzo et al., 2021; Megnin-Viggars et al., 2015; Mule et al., 2022). Moreover, it can ease conversations about specific challenges and support parents'

engagement with and benefit from offered services (Gram et al., 2023; Jakobsen and Overgaard, 2018).

Acceptability among those delivering interventions is essential for feasibility and success (Sekhon et al., 2017; Skivington et al., 2021). We found that acceptability was high among HCPs who value the conversational tools (Carlin et al., 2020; Marley et al., 2017; Schmied et al., 2020) and consider them as enhancing the identification of psychosocial vulnerability factors (Kohlhoff et al., 2021a; Marley et al., 2017). Barriers, including insufficient time and lack competency development, were also identified (Carlin et al., 2020; Marley et al., 2017; Quispel et al., 2014a; Schmied et al., 2020). These findings are supported by existing research (Andersen et al., 2023; Fletcher et al., 2021; Viveiros and Darling, 2019). These barriers can lead to selective assessment and avoidance of asking sensitive questions (Andersen et al., 2023; Carlin et al., 2020; Carroll et al., 2018), missed opportunities for trust development (Andersen et al., 2023; Fletcher et al., 2021) and an instrumental approach that hinders the intended conversational approach (Andersen et al., 2023). Time constraints can foster a tense, rushed environment that is unconducive for parents to express potential vulnerabilities (Fletcher et al., 2021) and hinder parents in vulnerable positions from receiving needed support. Knowledge of psychosocial vulnerability factors has been found to be essential for midwives' confidence and sense of security in undertaking assessment (Everitt et al., 2022; Hauck et al., 2015; Noonan et al., 2018). Adequate organisational support, resource allocation and training of midwives are necessary to ensure midwives' acceptability of conversational assessment tools.

Another relevant measure of success for the tools is their performance, i.e., the ability to assist midwives and other HCPs to correctly identify and refer expectant parents in need of specialised support providing that referral options for the right supportive interventions are available.

Our findings reveal considerable differences regarding identification and referral rates. Comparison of tools was complicated as tools differed in methodological use and focused on different psychosocial risk and/or protective factors. These differences may influence rates of identification of vulnerability factors and referral to supportive interventions found in studies investigating performance. Differences in the identification of vulnerability factors may reflect different perspectives on psychosocial vulnerability, differences in access to supportive interventions and different target populations, e.g., regarding socioeconomic factors in the geographical uptake area. Studies conceptualising vulnerability in the context of perinatal care have highlighted the importance of focusing on risk as well as protective factors (de Groot et al., 2019; Scheele et al., 2020) and have highlighted the importance of including the family's resources and potential protective factors in the assessment. Vlassak et al. (2022) demonstrated that midwives tend to focus more on risk factors than protective factors when defining vulnerability. If compensatory protective factors are overlooked, the result may be an overestimation of risk factors and experiences of stigmatisation among expectant parents (Austin et al., 2015; Frederiksen et al., 2021; Jakobsen and Overgaard, 2018).

To assess the coverage of relevant psychosocial risk and protective factors, research is needed regarding the contribution of different domains of risk factors covered by assessment tools and ethical implications of different types of tools usage. Potential negative ethical implications of psychosocial risks have been emphasised by the World Health Organization and others if relevant referral opportunities or treatment options are unavailable (Austin et al., 2015; Waqas et al., 2022; Sagan et al., 2020). Considering cultural differences is crucial as demonstrated in the development of KMMS (Marley et al., 2017) and Perinatal EHC (Yi et al., 2008) where cultural sensitivity was prioritised.

Two studies investigated the effectiveness of assessment tools but applied study designs that do not allow for solid conclusions regarding effectiveness. Lack of well-founded conclusions about effectiveness constitutes an important limitation to existing knowledge and use of conversational tools to assess multiple dimensions of antenatal psychosocial vulnerability. Some tools include themes that are inspired by structured tools for assessment of depression in situations where effectiveness (Waqas et al., 2022) and/or evidence of performance has been established (Johnson et al., 2012). Further studies on multidimensional conversational tools are warranted to determine the most effective approach to antenatal assessment of psychosocial vulnerability.

Effectiveness of psychosocial assessment tools is not easily measured, as the effects are likely closely linked to opportunities for psychosocial support and subsequent referral to and engagement of expectant parents in supportive interventions. This notion aligns with studies exploring effects of combined use of a conversational assessment tool and intervention (e.g., Pedersen et al., 2021) and a meta-analysis of screening tools for antenatal depression (Pignone et al., 2002). Austin (2014) and Austin et al. (2017) have argued that psychosocial assessment should only be undertaken when it forms part of a coherent programme of assessment, referral and supportive interventions.

Unintended consequences of conversational assessment tools were identified in eight studies covering four tools, but systematic investigation is needed. Knowledge of the potential unintended consequences is paramount to avoid them (Bonell et al., 2015). We primarily identified unintended consequences and dilemmas in relation to the presence and involvement of the pregnant woman's partner during the psychosocial vulnerability assessment. Exclusion of partners can lead to inadequate support for pregnant women and mean that vulnerabilities related to partners are overlooked. It has been shown that 5–15 % of partners suffer from perinatal mental health disorders (Cameron et al., 2016; Leach et al., 2016; Paulson and Bazemore, 2010). Partners play a crucial role in family dynamics, hold essential resources for the family after birth (Cheng et al., 2016; Rini et al., 2006; Stapleton et al., 2012) and play a key role in the child's future psychosocial well-being (Lamb, 2010). Inclusion of partners in antenatal care is therefore recommended by the Danish and other health authorities (The Danish Ministry of Health, 2021; Highet, NJ and the Expert Working Group and Expert Subcommittees, 2023); however, fathers experience several barriers, e.g., gender norms, to antenatal care engagement and help-seeking (Livingston et al., 2021; Watkins et al., 2024; Wynter et al., 2024) and research on vulnerability assessment of expectant fathers/partners of pregnant women is scarce (Darwin et al., 2021). Further research on inclusion of partners in antenatal vulnerability assessment is thus needed.

A primary concern regarding partner presence and involvement in psychosocial assessment is related to IPV (Bergman et al., 2007), which is a significant risk factor for adverse maternal and child health and well-being (Chisholm et al., 2017; Janssen et al., 2003). While this underlines the importance of identifying IPV and offering the right help, Edin et al. (2010) showed that asking questions regarding IPV can be dangerous for a pregnant woman when her partner is present, highlighting the need for careful consideration of the chosen approach. The World Health Organization (2013) has no recommendations for systematic screening of IPV because of limited evidence but states that IPV calls for urgent support.

The mode of assessment and including information on IPV can affect whether pregnant women share sensitive information (Austin et al., 2022). Self-reported methods may be preferable to face-to-face assessment in identification of some types of psychosocial risk factors, and a meta-analysis (Hussain et al., 2015) showed that online, structured methods are best to assess IPV. Mule et al. (2022) found that conversational modes of assessment in particular supported women in sharing important vulnerability factors. This may call for combined use of conversational assessment tools and self-reported questionnaires as seen in the Netherlands (Quispel et al., 2014a).

Strength & limitations

The strength of the review is the systematic approach to the search

ensuring high recall of studies reporting on psychosocial assessment tools and minimising the risk of missing relevant studies. As we only included studies in English or Danish, relevant studies in other languages may have been overlooked. Screening by two independent reviewers and transparency of the review process limited risk of bias. However, quality assessment was performed by only one reviewer. Whilst this could be a limitation to our review, it was accommodated by discussing uncertainties with another reviewer until consensus was reached. Attention was paid to risk of bias in the synthesis by taking identified limitations of the studies into account, increasing confidence in our findings.

Conclusion

This comprehensive review searched for and synthesised existing knowledge pertaining to conversational antenatal psychosocial assessment tools, including identifying characteristics, acceptability, performance, effectiveness and potential unintended consequences, contributing to informed decision-making regarding use of assessment tools in clinical practice. Seven tools were identified. While evidence regarding effectiveness of conversational tools on pregnancy and birth outcomes remains limited, we recommend that future research increases the focus on tool performance and referral to supportive interventions. Despite limitations, the review provides valuable insights into the characteristics of available conversational tools that are generally well accepted by users and may support a person-centred approach and development of trusting parent-HCP relationships. Identification of potential unintended consequences of conversational tools emphasises the need for more systematic and in-depth investigation of tools and approaches for assessment of psychosocial vulnerabilities among expectant parents. This review provides an overview of current evidence for conversational psychosocial assessment tools and offers important insights to help facilitate informed clinical decisions about tools and approaches to secure safe and effective antenatal psychosocial assessment among expectant parents.

Disclosures abbreviations

HCP: Health Care Professional
IPV: Intimate Partner Violence

Ethical statement

Not applicable.

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CRediT authorship contribution statement

Pernille Gram: Writing – original draft, Visualization, Validation, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Clara Graugaard Andersen:** Writing – original draft, Visualization, Validation, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Kirsten Schultz Petersen:** Writing – review & editing, Validation, Methodology, Conceptualization. **Marianne Stistrup Frederiksen:** Writing – review & editing, Validation, Conceptualization. **Louise Lund Holm Thomsen:** Writing – review & editing, Validation, Conceptualization. **Charlotte Overgaard:** Writing – review & editing, Visualization, Validation, Supervision, Resources, Methodology, Conceptualization.

Declaration of competing interest

The authors have no conflicting interests to declare.

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Supplementary materials

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