

RESEARCH ARTICLE OPEN ACCESS

A Scoping Review and Environmental Scan of Health Literacy and Resources Related to Menstrual Health for Aboriginal Women in Australia

Talila Milroy  | Jacqueline Frayne | Kate Smith | Dawn Bessarab

University of Western Australia, Perth, Australia

Correspondence: Talila Milroy (talila.milroy@uwa.edu.au)

Received: 8 March 2025 | **Revised:** 10 March 2025 | **Accepted:** 20 March 2025

Handling Editor: Williams Carmel

Funding: This project was funded by the RACGP Foundation and also received funding from the Women's Health Research Translation Network (WHTRN) under the MRFF.

Keywords: aboriginal health | menstrual health literacy | menstruation | scoping review

ABSTRACT

Issues Addressed: Menstrual health literacy is an important aspect of improved engagement, management and social participation linked to menstrual health and wellbeing. There is stark evidence surrounding culturally appropriate menstrual health literacy for Aboriginal women in Australia.

Methods: This scoping review sought to explore current menstrual health literacy programmes and resources in Australia with further interrogation of how these relate to Aboriginal women specifically. This project used the Joanna Briggs Institute (JBI) scoping review methodology to systematically map and explore menstrual health literacy programmes and resources in Australia and for Aboriginal women.

Conclusions: Seven research articles and nine grey literature reports from Australia met the inclusion criteria. The grey literature was insightful in relation to community based and culturally appropriate approaches to improving menstrual health literacy.

So What? Further research is required to demonstrate how culturally safe menstrual health programmes and health literacy resources that address the psychosocial and cultural needs of Aboriginal women, can be appropriately co-designed, evaluated and adapted to the diverse geographical contexts, in partnership with and for Aboriginal women.

1 | Introduction

1.1 | Rationale

Improving menstrual health and hygiene is a global priority for addressing health inequities and barriers to social participation for women worldwide [1]. Menstrual health encompasses a state

of complete physical, mental and social wellbeing [2]. Menstrual health is linked with menstrual health literacy, defined as the ability to engage with health information, understand menstruation and when to seek assistance and confidently manage menstrual health needs [3–5]. In general, health literacy ‘relates to how people access, understand and use health information in ways that benefit their health’ [6] and health education

For this review the term ‘Aboriginal’ will be used to refer to people who identify as Aboriginal in Australia, recognising the diversity of individuals and communities for which this term encompasses. The term ‘Indigenous’ refers more broadly to people who identify as Indigenous in international contexts.

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivs](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2025 The Author(s). *Health Promotion Journal of Australia* published by John Wiley & Sons Australia, Ltd on behalf of Australian Health Promotion Association.

encompasses constructed educational communication and health related information designed to improve health literacy of both individuals and communities, or related to improving health and/or health system utilisation [7].

In Australia, Aboriginal people face barriers in accessing culturally safe health care, with Aboriginal women facing additional challenges in menstrual health care compounding health inequity [1, 8, 9]. The ways Aboriginal women understand and manage their menstrual health is thought to be influenced by sociocultural factors and understandings of health and wellbeing [1]. Ciccia et al. [10], in a recent scoping review of the menstrual experiences of Indigenous people in Australia, Canada and New Zealand, note that menstrual health literacy can be affected by multiple historical, cultural and social factors and is generally poor across societal groups affected by health inequities, leading to delays in diagnosis and care for menstrual health conditions. In their 2019 article, Krusz et al. [1] discuss menstrual health challenges that are pervasive for Aboriginal and Torres Strait Islander women, including cultural norms that may discourage discussion of menstruation and the impact of reduced access to menstrual health information. In particular, they outline the need for culturally appropriate menstrual health literacy resources, including the provision of community-designed education regarding puberty and women's reproductive health, and to engage with Aboriginal and Torres Strait Islander women in community leadership roles to share messages around menstrual health [1]. Barriers to menstrual health education were further highlighted in a qualitative study conducted by Hall et al. [11] which reviewed water sanitation in several remote Aboriginal and Torres Strait Islander communities, revealing the gender inequities that were present, compounded by a lack of school and primary health care based education surrounding menstrual health [11]. To improve cultural safety of menstrual health resources and programmes, incorporating menstrual cultural perspectives and drawing knowledge from Aboriginal women's voices regarding menstrual health needs and care preferences, are required to enhance care provision for Aboriginal women [10, 12].

Given the paucity of published evidence around Aboriginal women's menstrual health in Australia [1, 10], this scoping review will gather evidence on menstrual health literacy and health education resources for women in Australia. This evidence will be further explored for how it relates to Aboriginal women specifically. A scoping review aims to descriptively map a body of evidence and describe broader concepts and is appropriate for this study's research objectives [13]. The summation of the available evidence will be valuable in determining knowledge, resource gaps and best practice in relation to menstrual health literacy for Aboriginal women, to inform the development of culturally appropriate menstrual health education resources for health promotion initiatives.

1.2 | Objectives

The purpose of this scoping review is to comprehensively document the evidence surrounding menstrual health literacy and

related health education resources for women in Australia and specifically for Aboriginal women.

The review will explore the following questions:

- i. What is known from the literature about developing, accessing, delivering and evaluating health literacy and health education resources about menstrual health in Australia?
- ii. What does the literature extracted from Question (i) say about which health literacy and health education resources are effective in improving menstrual health literacy in Australia?
- iii. What does the literature extracted from Question (i) say about menstrual health literacy and health education resources for Aboriginal women?
- iv. From the above information what are the knowledge gaps regarding menstrual health and hygiene literacy and education resources for Aboriginal women in Australia?

2 | Methods

2.1 | Protocol and Registration

There are no other registered or previous scoping reviews pertaining to this topic and question. The protocol for this scoping review was registered on Centre for Open Science on the 14th November 2023 (Registration: https://osf.io/ygu2p/?view_only=).

The scoping review will be conducted in accordance with the JBI Evidence Synthesis Guidelines for conducting scoping reviews [14] and includes the use of the preferred reporting items for systematic reviews and meta-analyses extension for scoping reviews (PRISMA-ScR Checklist) [15] (Appendix A).

2.2 | Eligibility Criteria

The inclusion criteria for the review were any literature published regarding menstrual health literacy and patient education resources in Australia with no specified date range restriction. The search focussed on menstrual health literacy and patient education to capture publications related to this area generally. Whilst the authors were aware of the paucity of information related to Indigenous populations, this did not form a restriction of the search. Published research articles and local and national guidelines were included. Grey literature boundaries were reached by consensus and included sources deemed likely to yield information relevant to the topic (Table 1). Exclusion criteria included the following: All international literature outside of Australia; literature published in languages other than English as English is the primary language of Australia; literature pertaining to women outside of Australia and that focusses on menstrual health and its management only without reference to health literacy or education, and literature that only focusses on contraception, pregnancy, antenatal care and fertility. In addition, this review focusses on detailing information related to Aboriginal women recognising that whilst there are similarities with Torres Strait Islander women, the Indigenous authors identify as Aboriginal, and therefore would encourage Torres Strait

TABLE 1 | Concept map of search terms.

	Population	Concept	Context
Key Terms	Women who menstruate	Health literacy	Australia
Synonyms/Alternate Terms according to database			
Medline(Ovid)	Menstruation (subject heading) Menstrua* (key word) Dysmenorrhea (subject heading) Dysmenorrhea (key word) Dysmenorrhoea (key word) Menarche (subject heading)	Health education (subject heading) Health literacy (subject heading) Health promotion (subject heading) Patient education as topic (subject heading) Health education or health literacy (titles, abstracts)	Australia (subject heading, exploded) Australia* or Queensland or Victoria or Tasmania or Northern Territory or New South Wales (key word)
Embase (Ovid)	Menstruation (subject heading exploded) Menstruation disorder (subject heading exploded) Menstrua* (key word) Dysmenorrhea (subject heading) Dysmenorrh* (key word) Menarche (subject heading) Menarche (key word)	Health literacy (subject heading exploded) Health literacy (key word) Health education (subject heading) Health education (key word) Health promotion (subject heading) Health promotion (key word) Patient education (subject heading) Patient education (key word)	Australia (subject heading) Australia* (key word) New South Wales OR Northern Territory OR Queensland OR Victoria OR Tasmania (key word)
CINAHL (Ebsco)	(MH "Menstrual Cycle") OR (MH "Dysmenorrhea") OR (MH "Menstrual and Perimenopausal Disorders") OR (MH "Menstruation Disorders") TI (menstruation or menstrua* or dysmenorrhea or dysmenorrhoea or menarche) AB (menstruation or menstrua* or dysmenorrhea or dysmenorrhoea or menarche)	MH "Health Literacy" MH "Health Education" TI (health literacy or health education) AB (health literacy or health education)	MH "Australia+" MH "Australia" TI (Australia* or Queensland or Victoria or Tasmania or Northern Territory or New South Wales) AB (Australia* or Queensland or Victoria or Tasmania or Northern Territory or New South Wales)
Informit	menstruation OR menstrua* OR menses OR menarche OR dysmenorrhoea OR dysmenorrhoea (all fields)	"health literacy" OR "health education" OR "health promotion" OR "patient education" (all fields)	Not required as Australian database
Exclusion criteria	Non-English studies	Non-English studies	Non-English studies

Note: Combine columns vertically with OR; Combine each concept horizontally with AND; MH = CINAHL search function for subject headings; TI = CINAHL search function for searching of titles; AB = CINAHL search function for searching of abstracts; + = CINAHL function for explosion of subject headings; " " used in Informit to allow searching of phrases. Grey literature boundaries and sources of information. Annual Australian government health reports. Conference proceedings. Australian state-based women's hospitals local guidelines or resources related to management of menstrual health conditions. Health blogs or media articles related to Aboriginal women's menstrual health. Theses related to Aboriginal women's menstrual health. Consumer menstrual health education resources available online. Patient education resources from Aboriginal Community Controlled Health Organisations available online. Indigenous Health Infonet. Health professional guidelines related to menstrual health (Indigenous and non-Indigenous).

*Indicates terms that are truncated to a prefix.

Islander led research to complete culturally secure analysis related to this topic.

2.3 | Information Sources

The sources of information from the review were interrogated for information according to the review questions. The concept map for the search strategy for the included databases (Medline,

Embase, Cinhal, informit) along with the grey literature boundaries is shown in Table 1. The search was undertaken between 10th January 2024 and 17th January 2024. All databases had alerts established so new items meeting the search parameters were detected. No new articles were detected from the 17th January to 29th of March 2024. Grey literature search was last done on the 17th of January 2024. The reference lists of included sources were reviewed for additional articles, but no new articles were detected.

2.4 | Search

Key terms and search strategy were reached by consensus by master's student T.M. and the supervisory team (J.F., D.B., K.S.). TM and DB are Indigenous academics. A research librarian was consulted regarding the search strategy, search terms and proposed literature sources. Table 1 includes the concept map for the systematic database search. The search strategy within the listed databases included the use of key terms, both mapped and unmapped to indexed subject headings. The subject headings were expanded to confirm the indexation of the term and the 'explode' function was used if deemed appropriate. Literature was not limited by date of publication. The citation list of relevant publications was analysed to check for additional literature. A full example of the search strategy from one database is included in Appendix B. Endnote was used to document and manage the references throughout the research process.

2.5 | Selection of Sources of Evidence

Sources of information were screened at the title and/or abstract level followed by a full text examination of those that appeared relevant. This process was undertaken independently by T.M. and J.F. and after their individual screening they met and discussed the sources that would be selected for inclusion. Excluded sources, examined at the abstract or full text level, are included in Appendix C with justification for exclusion. A PRISMA flow chart [15] is presented in the results as a figure to show the study selection process.

2.6 | Data Charting Process and Data Items

Descriptive data about the included literature is reported in Table 2. Descriptive data variables include the citations, aim of the study, type of study/information resource, location, sample size (if applicable), target audience and themes and key information. Data extraction was undertaken by T.M. and the extracted data items were cross checked by J.F. The use of a pre-determined set of data extraction items as outlined in the previously registered protocol aligns with the data charting method outlined by Arksey and O'Malley [13]. This approach lends itself to consistent charting approach that summarises and collates data and allows identification of themes from the included studies. The previous protocol listed possible topic groups however additional themes emerged during the review process and these are outlined in the results.

2.7 | Synthesis of Results

Similarly to the Askey and O'Malley [13] method of synthesising data across variable literature types, the template of data items was applied across each study source and documented throughout the review process. A separate table was used to collate themes from various resources. These themes initially sat under the topic groups that were outlined in the original protocol. As each literature source was read at the full text level information

that fell under the themes was added to the table with the citation and the relevant textual information.

3 | Results

3.1 | Selection of Sources of Evidence

Figure 1 is a PRISMA flow chart that outlines the selection of sources of evidence and has been adapted from the 2020 PRISMA statement [24].

3.2 | Characteristics of Sources of Evidence

Table 2 shows the sources of evidence chosen with citations and presents the characteristics for which data were charted.

3.3 | Results of Individual Sources of Evidence

Table 2 shows the key points and information drawn from each of the included literature sources. Further synthesis according to the review questions and objectives and narrative review is presented below.

3.4 | Synthesis of Results

This scoping review aimed to document a comprehensive overview of the available knowledge surrounding menstrual health literacy resources for Aboriginal women in Australia. Four databases were searched according to the search strategy and a total of 7 research articles were included in this review. An additional 9 sources of information (websites, organisational reports, government documents/reports) were evaluated from the grey literature. In relation to the review questions the following information was found from the included literature sources.

Review questions:

- i. What is known from the literature about developing, accessing, delivering and evaluating health literacy and health education resources about menstrual health in Australia?

In Australia, much of the literature surrounding developing, accessing, delivering and evaluating health literacy and health education resources about menstrual health in Australia centres around delivery of this information to adolescent age groups between 12 and 25 years of age, with a predominant focus on school-based programmes. This was evident in 6 of the included research publications [3–5, 16–18] and several of the grey literature resources.

The literature defined and measured menstrual health literacy in variable ways (Table 3), and whilst there were commonalities regarding menstrual health literacy components, such as understanding of information, self-care, personal health more broadly, ability to engage with healthcare and social

TABLE 2 | Studies included for qualitative synthesis.

Author	Aim of the study	Type of study/information resource	Location (national vs. local)	Sample size (if applicable) target audience	Key information	Associated themes from the synthesis
Armour et al. [3]	Explore key aspects of menstrual health literacy and menstrual management in young women ages 12–25 years	Cross-sectional online survey	Australia—national	4202 Academic	Young women in Australia have low levels of menstrual health literacy Health and Physical Education classes in school provide opportunities to access reliable information Young women predominately sought menstrual health information from online platforms The percentage of respondents who were Aboriginal and/or Torres Strait Islander held population parity (3.2%) Majority of respondents identified their period as normal despite significant impact on their academic and extracurricular lives.	Adolescents and young women the focus of health promotion and health literacy discussions Variable definitions of menstrual health literacy Known gaps in menstrual health literacy Sources of menstrual health information Benefits of menstrual health literacy
Armour et al. [16]	Explore if access to a web-based resource was a feasible and acceptable method for improving menstrual health literacy and encouraging health seeking behaviour	Pre-post single group evaluation design.	Australia—national	75 Academic	An online web-based resource on menstrual health information was feasible, acceptable, economically sound and engaging for young women in Australia. The benefits included broad dissemination, improved menstrual health literacy, improved confidence in self management of their health, and improved engagement with health professionals with increased identification of menstrual abnormalities. Gaps for further exploration include the acceptability of the resource for diverse population groups and whether an app-based delivery would be more preferable.	Adolescents and young women the focus of health promotion and health literacy discussions Known gaps in menstrual health literacy Sources of menstrual health information Benefits of menstrual health literacy Suggested approaches to improved menstrual health literacy Tools used to measure menstrual health literacy Gaps in menstrual health literacy/future research directions

(Continues)

TABLE 2 | (Continued)

Author	Aim of the study	Type of study/information resource	Location (national vs. local)	Sample size (if applicable) target audience	Key information	Associated themes from the synthesis
Hall et al. [11]	Explore barriers to menstrual hygiene management issues and associated needs within remote Indigenous communities in Western Australia	Qualitative interviews	Australia—local, four states and territories of mainland Australia	17 representatives from key organisations providing water, sanitation and/or hygiene to three or more discrete, remote communities in four states and territories in mainland Australia Academic	Barriers to menstrual health and hygiene in remote Aboriginal communities are multifaceted and include access to water and sanitation, access to products and psycho-social factors such as cultural taboos, privacy issues, shame, insecurity and embarrassment. The identified barriers limit capacity of women and girls to effectively manage their periods and for social participation.	Known gaps in menstrual health literacy Menstrual health literacy and Aboriginal women Sources of menstrual health information Gaps in menstrual health literacy/ future research directions
Kang et al. [17]	Explore and categorise health concerns of adolescent girls sending unsolicited emails to a teenage girls' magazine	Content analysis	Australia—national	1000 emails submitted to an adolescent girls magazine health advice column Academic	Popular media and age specific magazines are important sources of health information for adolescent girls. Questions that are posed to health columns at magazines can give insight into the health concerns for adolescents. Adolescent girls may not explicitly raise health concerns in consultations and clinicians should be encouraged to directly ask about periods to increase comfort and rapport.	Adolescents and young women the focus of health promotion and health literacy discussions Sources of menstrual health information Benefits of menstrual health literacy Suggested approaches to improved menstrual health literacy Gaps in menstrual health literacy/ future research directions

(Continues)

TABLE 2 | (Continued)

Author	Aim of the study	Type of study/information resource	Location (national vs. local)	Sample size (if applicable) target audience	Key information	Associated themes from the synthesis
Raftos et al. [18]	Explore the ways media advertisements in Australian magazines represent menstruation and the menstrual experience in terms of page space, textual content and visual images	Content analysis guided by feminist philosophical approach	Australia—National	4 magazines, all issues from January 1996–December 1996 (48 issues in total) Academic	Print media and advertising are important sources of information for girls and women. Magazines are seen as a source of expert health information by young women. Magazine advertisements for menstrual health products use techniques, such as scientific language, that may convince young women of the expertise of the information. Depictions of femininity in menstrual health advertising exclude women from diverse backgrounds. Advertising of menstrual health products reinforces menstrual taboos.	Adolescents and young women the focus of health promotion and health literacy discussions Menstrual health literacy and Aboriginal women Sources of menstrual health information
Roux et al. [4]	Validation of an adolescent ovulatory menstrual health literacy questionnaire and to measure reliability by test–retest	Face validity and test–retest reliability study	Australia, local across 4 school sites in Perth, Western Australia	28 adolescents for face validity, 89 paired responses for test–retest reliability Academic	This menstrual health literacy questionnaire was validated and shown to have face validity and test–retest validity. The questionnaire included items around ovulation, menstrual difficulties and engagement This validated ovulatory-menstrual health literacy questionnaire assesses the functional, interactive and critical domains of OM health literacy and can be used with adolescent populations.	Adolescents and young women the focus of health promotion and health literacy discussions Menstrual health literacy definitions Menstrual health literacy and Aboriginal women Benefits of menstrual health literacy Suggested approaches to improve menstrual health literacy Tools used to measure menstrual health literacy Gaps in menstrual health literacy/future research directions

(Continues)

TABLE 2 | (Continued)

Author	Aim of the study	Type of study/information resource	Location (national vs. local)	Sample size (if applicable) target audience	Key information	Associated themes from the synthesis
Roux et al. [5]	Evaluation of the My Vital Cycles health literacy programme using a ovulatory-menstruation health literacy questionnaire administered pre and post programme	Mixed-methods single arm quasi-experimental design comprising and evaluation and a cohort intervention evaluation study	Australia—local, single site (school in Western Australia)	94 Academic	My Vital Cycles was an effective school based menstrual health literacy programme. Partnerships and active engagement with parents, medical students, staff and school based health professionals improved the outcomes. The programme improved participant's knowledge and confidence to engage and verbalise menstrual health concerns with health professionals.	Adolescents and young women the focus of health promotion and health literacy discussions Definitions of menstrual health literacy Benefits of menstrual health literacy Suggested approaches to improve menstrual health literacy. Gaps in menstrual health literacy/ future research directions
<i>Grey literature included for qualitative synthesis</i>						
	Aim (if applicable)	Type of study/information resource	Location (national vs. local)	Sample size (if applicable) Target audience	Key themes/information	

(Continues)

TABLE 2 | (Continued)

Author	Aim of the study	Type of study/information resource	Location (national vs. local)	Sample size (if applicable) target audience	Key information	Associated themes from the synthesis
Connolly [19]	To document and report on South Australian children and young peoples perspectives about the impact of menstruation on wellbeing, participation and education and provide suggestions on how to make a difference to menstrual wellbeing.	Government document/report	Local—South Australia	A total of 2985 children and young people aged 7 to 22-years provided 3267 responses to two period surveys undertaken between May and September 2020. 3% as being from an Aboriginal and Torres Strait Islander background. General public and health researchers	Young people want greater information about the menstrual cycle beyond the purely biological and including how social aspects of menstruation vary in different cultural context. Lack of information, shame and stigma, trivialisation and dismissal of symptoms affect young people. Young people who reported being from an Aboriginal or Torres Strait Islander background reported the highest number of days absent from school due to periods and not having product available. The cost of product was a significant contributing factor. Young people were concerned about the portrayal of menstruation in the media and in other sources, they sought increased information from schools and teachers.	Adolescents and young women the focus of health promotion and health literacy discussions Definitions of menstrual health literacy Sources of menstrual health information Benefits of menstrual health literacy Suggested approaches to improved menstrual health literacy

(Continues)

TABLE 2 | (Continued)

Author	Aim of the study	Type of study/information resource	Location (national vs. local)	Sample size (if applicable) target audience	Key information	Associated themes from the synthesis
South Australia Commissioner for Children and Young People [20]	To document and report on South Australian children and young peoples perspectives about the impact of menstruation on wellbeing, participation and education and provide suggestions on how to make a difference to menstrual wellbeing.	Government document/report	Local—South Australia	More than 4000 young people aged 12 to 22years participated in the Commissioner's two Period Surveys and Sex Education Survey—135 identified as Aboriginal. General public and health researchers	Aboriginal young people reported lower levels of trust in teachers and school lessons as sources of information.	Known gaps in menstrual health literacy Sources of menstrual health information Suggested approaches to improving menstrual health literacy
Plan International [21]	Collect data on the cost of living crisis and period poverty	Health organisation report	National	517 people aged 18–42 who menstruate in Australia completed the questionnaire, including: 209 who said they came from a Culturally and Linguistically Diverse (CALD) background General public and health researchers	Culturally safe menstrual health education is a key gap. Aboriginal and Torres Strait Islander women who menstruate experience shame with managing their periods and decolonising attitudes and menstrual health education are key to addressing this.	Menstrual health literacy and Aboriginal women Suggested approaches to improve menstrual health literacy Tools used to measure menstrual health literacy

(Continues)

TABLE 2 | (Continued)

Author	Aim of the study	Type of study/information resource	Location (national vs. local)	Sample size (if applicable) target audience	Key information	Associated themes from the synthesis
King and Hall [22]	Cultural and social pilot project to obtain information about menstruation attitudes among Indigenous adolescent boys and girls aged 10–18 years	Health blogs or media articles related to Aboriginal women's menstrual health	Local—Western Cape York—remote North Queensland	Yarning groups conducted to discuss attitudes and concerns surrounding menstruation. 501 girls took part in the yarning circles. Unclear how many boys took part in the Q&A and yarning circles General public and health researchers	Adolescents were provided with a culturally safe space to discuss menstrual health knowledge and attitudes Girls prioritised their concern with pain and mood management, school attendance, household infrastructure, cost of product and waste management topping the list of concern. Girls were also concerned about the stigma and teasing surrounding their periods and wanted boys to have more information. Yarning circles were conducted with boys and two key findings were that boys knowledge level regarding menstruation was low but were able to reflect on the experiences of the females in their lives and define options for assisting girls with the challenges they faced.	Adolescents and young women the focus of health promotion and health literacy discussions Suggested approaches to improved menstrual health literacy Tools used to measure menstrual health literacy Gaps in menstrual health literacy/ future research directions
Australian Broadcasting Corporation article https://www.abc.net.au/news/2020-02-20/fighting-the-shame-of-menstruation-in-remote-communities/11963334 Online Accessed 17th January 2024	Article describing menstrual health literacy workshops being conducted for Aboriginal women in Central Australia	Health blogs or media articles related to Aboriginal women's menstrual health	Local—remote Central Australia	Bracelet making workshops introduce the concept of the menstrual cycle. General public.	Bracelet making workshops are designed to create a safe place to sit and discuss the menstrual cycle with a visual tool to aid understanding. In a small group setting women are able to ask questions and engage in conversations with other women to learn and share experiences.	Menstrual health literacy and Aboriginal women Sources of menstrual health information Suggested approaches to improved menstrual health literacy Gaps in menstrual health literacy/ future research directions

(Continues)

TABLE 2 | (Continued)

Author	Aim of the study	Type of study/information resource	Location (national vs. local)	Sample size (if applicable) target audience	Key information	Associated themes from the synthesis
Jean Hailes website • Aboriginal and Torres Strait Islander resources including associated media releases https://www.jeanhailes.org.au/resources/aboriginal-and-torres-strait-islander-resources	Suite of consumer information with specific resources for Aboriginal and Torres Strait Islander women including those related to Polycystic Ovarian Syndrome (PCOS) and periods	Consumer menstrual health education resources available online	National	Resources include a health professional educational toolkit, educational booklets for women and girls and animations for women and girls. Public/consumer.	The educational toolkit was developed for use with Aboriginal women in Central Australia. The educational toolkit includes a PowerPoint presentation and flipbook that uses Aboriginal art, depictions of Aboriginal women and diagrams included have women of colour. Topics included are the biological information surrounding periods, what to expect, how to manage period symptoms and bleeding, how to manage product and signs that need to be discussed with a health professional. There is an associated consumer booklet and animation that includes the same information.	Menstrual health literacy and Aboriginal women Suggested approaches to improved menstrual health literacy
Nganampa Health Council website • Programmes descriptions https://www.nganampahalth.com.au/nganampa-health-women-s-health	Description of a womens health education programme run through Nganampa Health Council	Patient education resources from Aboriginal Community Controlled Health Organisations available online	Local	Not applicable Public/consumer.	Description of programme that delivers health information to women surrounding reproductive health, young girls health information, antenatal care and birth, outreach clinics at multiple venues in age and with the use of culturally appropriate resources and education content.	Menstrual health literacy and Aboriginal women

(Continues)

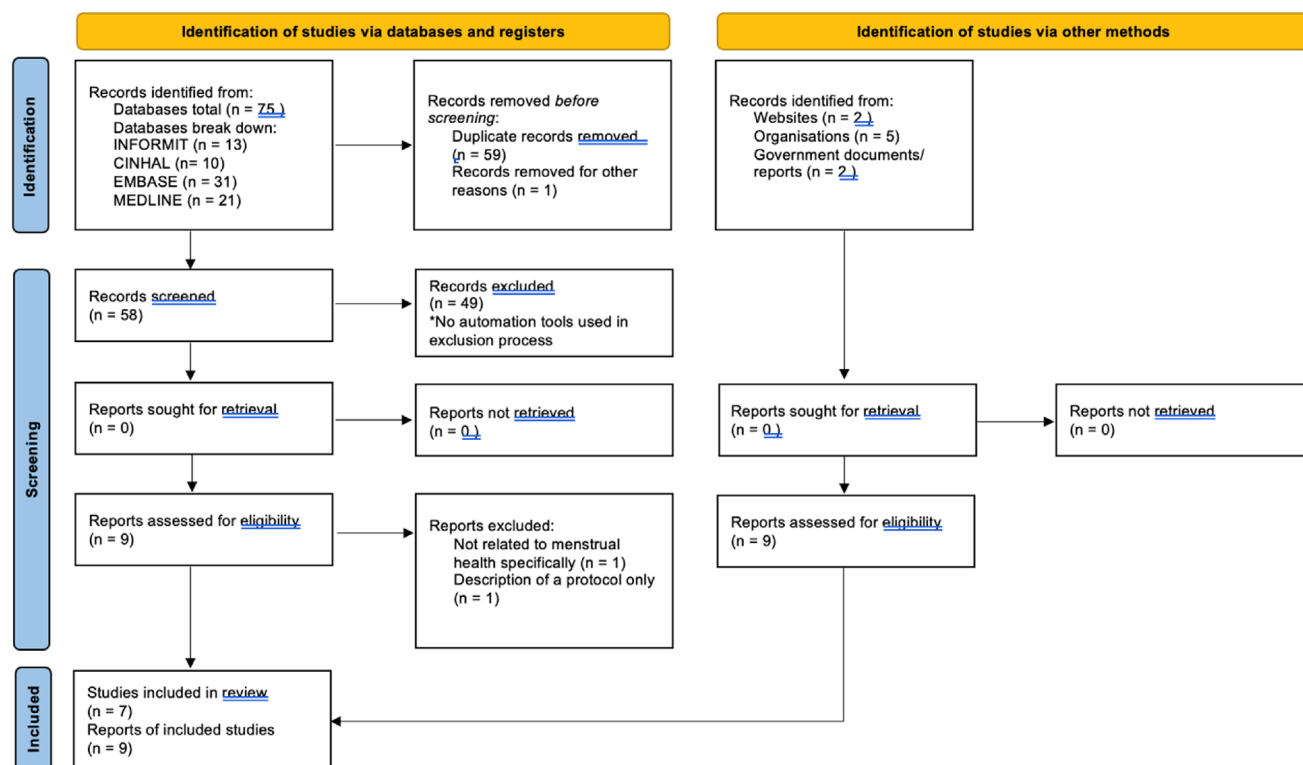
TABLE 2 | (Continued)

Author	Aim of the study	Type of study/information resource	Location (national vs. local)	Sample size (if applicable) target audience	Key information	Associated themes from the synthesis
Remote Primary Health Care Manuals [23] https://healthinfo.net.ecu.edu.au/healthinfolnet/getContent.php?linkid=616637&title=Minymaku+Kutju+Tjukurpa%3A+women%E2%80%99s+business+manual&contentid=28738_1	The Remote Primary Health Care Manuals (RPHCM) are intended for use by trained health professionals and designed to be used primarily in remote (largely Aboriginal and Torres Strait Islander communities).	Patient education resources from Aboriginal Community Controlled Health Organisations available online	Local—Central Australia/Northern Territory	Not applicable Health professionals	Health professional manual of multiple topics surrounding women's health. Guidance provided in introductory sections surrounding cultural factors to consider when discussing sensitive womens health issues and providing care. Suggested approaches to culturally safe engagement regarding women's health include provision of private settings, knowledge of local protocols surrounding women's health and relevant cultural factors, engagement with the local community including the Aboriginal and Torres Strait Islander health practitioners and delivery of information in community group settings.	Menstrual health literacy and Aboriginal women Sources of menstrual health information Suggested approaches to improve menstrual health literacy

(Continues)

TABLE 2 | (Continued)

Author	Aim of the study	Type of study/information resource	Location (national vs. local)	Sample size (if applicable) target audience	Key information	Associated themes from the synthesis
Central Australian Youth Link-Up Service mission—Menstrual Health Management booklet: https://static1.squarespace.com/static/50061cbb84ae216bb5cb9339/t/5e33c761cfecda584de8878d/1580451774060/MHM_2019_e-versi on_150dpi.pdf Accessed 23rd March	Locally informed Menstrual Health and Hygiene Management guidance document intended to provide support to initiatives in Central Australia by increasing awareness among service providers and agencies providing menstrual healthcare to Aboriginal girls from Central Australia and equipping them with knowledge of local practices, suitable language and suggested resources.	Patient education resources from Aboriginal Community Controlled Health Organisations available online	Local—Central Australia	Not applicable. Health professional and organisations.	Intended to provide information and ideas on how to start a discussion, support menstrual health and hygiene management activities and facilitate access to care. Presents the World Health Organisation and UNICEF fundamentals of menstrual health and hygiene against the specific considerations of Aboriginal women in Central Australia. Describes workshops run in community with women to increase menstrual health and hygiene knowledge. Also described and provides visual resources and specific activities and discussion tools that can be employed to engage community member in discussion.	Adolescents and young women the focus of health promotion and health literacy discussions Menstrual health and Aboriginal women Sources of menstrual health information Suggested approaches to improve menstrual health literacy



From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71. For more information, visit: <http://www.prisma-statement.org>

FIGURE 1 | PRISMA flow chart.

wellbeing related to menstruation [3–5, 19], there was no concise definition. Generally for women in Australia gaps in menstrual health literacy were identified and included, gaps in knowledge about the biological basis of the menstrual cycle [3], how to manage symptoms of the menstrual cycle [3, 11] and the variability in delivery and quality across school based programmes [16].

The benefits of menstrual health literacy was reported and included assisting in self-care [3, 5], help seeking [3, 16, 17] and identification of pathology [3, 5, 16]. Self-management, self-care and increased confidence appeared to be improved across two of the included studies [5, 16] and positive representations and open discussions of menstrual health through education appeared to contribute to overall menstrual wellbeing [5, 16, 19].

- ii. What does the literature extracted from Question (i) say about which health literacy and health education resources are effective in improving menstrual health literacy in Australia?

The included literature sources discussed a range of sources of information related to menstrual health literacy and described the results of two menstrual health literacy programmes.

In relation to where women sought menstrual health information, most engaged with doctors [3], family [3] and the internet [3, 17]. Doctors and health professionals were a trustworthy source of information [3], but information was mainly sought if

there was a problem, such as urinary symptoms, that needed to be addressed. Kang et al. [17] described the effects of the internet and aged-based magazines as a source of important health information for adolescents who may form health identities through comparison to peer experiences. Raftos et al. [18] also discussed how the media is uniquely positioned to deliver health, health promotion and lifestyle information to girls and women and how certain advertising strategies can create the perception of factual and expert knowledge by capitalising on health professional trustworthiness through the use of clinical imagery and language in the context of menstrual product advertisements. Schools and teachers were less relied on as a source of information despite commonly delivering health and physical education classes [3, 11, 19].

Regarding menstrual health literacy programmes two studies evaluated the effectiveness of an educational programme. Armour et al. [16] described a 3-month web-based programme, trialled in a national cohort of 75 participants aged between 14 and 25 years old. The programme delivered menstrual health information and discussed self-management strategies and showed good feasibility and accessibility due to the high recruitment and retention rates. The authors reported pre and post programme measures and surveyed participants to evaluate acceptability. Good acceptability of the programme was reported with 90% of participants indicating the information was ‘very helpful’, but many participants also reported that they would prefer delivery through a smartphone app. Roux et al. [5] evaluated the MyVitalCycles face-to-face menstrual health education programme, concluding it was effective in

TABLE 3 | Definitions and measures of menstrual health literacy across sources.

Citation	Definition used
Armour et al. [3]	'health literacy, defined by the Institute of Medicine as "the degree to which individuals have the capacity to obtain, process, and understand basic health-related decision."'
Roux et al. [4]	'Health literacy includes the cognitive and social skills to enable an individual to maintain good personal health through gathering, understanding and accordingly using information. As a 'vital sign', menstruation may reflect personal health. Skills in observing, interpreting and responding to the cycle's biomarkers would constitute a specific health literacy'.
Roux et al. [5]	'The World Health Organisation (WHO) defines health literacy as 'the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health'. The ovulatory menstrual (OM) cycle is considered a "vital sign" of good health. Skills in observing, interpreting, and managing the OM cycle would constitute a specific health literacy. Therefore, OM health literacy can be defined as firstly, the discipline of applying OM cycle knowledge and skills to maintain personal health by reference to ovulation which drives menstruation and with due cognizance of life stage and/or stressors, and secondly, confident engagement and active co-operation with healthcare providers to restore good reproductive health as needed'.
Connolly [19]	'By recognising menstruation as central, rather than peripheral, to opportunity and participation and affecting all aspects of life and citizenship, there is scope to elevate menstruation as a key education, employment and health policy issue'.
Citation	Measurement tool used
Armour et al. [16]	Period ImPact and Pain Assessment tool Health Literacy Questionnaire Health Education impact Questionnaire
Roux et al. [4]	Adolescent Ovulatory Menstrual Health Literacy Questionnaire
Hall et al. [11] Plan International [21] King and Hall [22]	Purpose designed surveys and discussion prompts [11, 21, 22]

improving confidence and comfort in managing menstruation. These findings were based on post programme improvement in items on a validated menstrual health literacy questionnaire and themes drawn from post programme participant focus groups. The study found that wrap around involvement of teachers, health professionals and peer support in the form of medical students, improved programme delivery and engagement. These two studies were key examples of Australian based cohort interventions specifically evaluating the effectiveness of a menstrual health educational and literacy programme.

iii. *What does the literature extracted from question (i) say about menstrual health literacy and health education resources for Aboriginal women?*

Information about Aboriginal women's menstrual health literacy and health education resources mostly came from the grey literature resources, discussed below. The only peer reviewed literature that discussed Aboriginal women's menstrual health literacy specifically was the article by Hall et al. [11] and further commentary was included in the report from the South Australia Commissioner for Children and Young People [20].

Gaps in menstrual health literacy are intensified for Aboriginal women by psycho-social factors such as stigma, shame and embarrassment [11, 19, 20]. The A Tough Period: Global Report released by Plan International [21] describes a lack of culturally appropriate education, compounded by the ongoing effects of colonisation. Hall et al. [11] reported that lack of knowledge about menstrual health was one of the key factors contributing to school non-attendance for Aboriginal girls in remote communities. The report from South Australia [20] which had 3% of respondents who identified as Aboriginal and/or Torres Strait Islander, reported that those surveyed knew little about periods before menarche, many could not recall the school-based education, and that there was shame surrounding help seeking. In addition, young Indigenous people responded that there was less trust in the information delivered by schools and teachers about relationships and sexual health compared to non-Indigenous respondents [20].

Aboriginal young people may find information from family members about menstruation helpful [25], along with more neutral or anonymous sources of information, for example people external to the community [11]. The Minymaku Kutju Tjukurpa Women's Business Manual [23] discusses the important role women have in discussing sensitive women's health issues, including female family members, senior community women and female health practitioners. The manual also suggests consulting with older women about appropriate ways to deliver information, culturally appropriate people in the community for delivering information and the use of community women's only meetings to deliver information in a group setting [23], with the use of visual aids to enhance discussions about sensitive and traditionally private subjects. The Central Australian Youth Link-up Service mission—Menstrual Health Management booklet suggests that delivery of menstrual health information before puberty supports girls to be confident and prepared to manage menstruation [26].

The involvement of teachers in community based education, and on Country education, also removes shyness and barriers and appears to allow more open communication between teachers and students [26]. Reports from young Aboriginal people in South Australia also supported early and consistent teaching about menstruation, with delivery from someone with confidence and comfort to deliver the information, along with opportunities to interact with peers about their experiences [19].

Approaches to delivery of information to Aboriginal women have also been described in the grey literature. The Central Australian Youth Link-up Service mission—Menstrual Health Management booklet outlines a range of activities to engage women in discussions and education such as locally developed artwork, visual aids and posters and photographs of the menstrual products on shelving at local shops [26] and other activities such as bracelet making, to introduce concepts around regular menstrual cycles [25, 26]. Family, community and peer support are described and endorsed [23, 26] including the use of on Country trips with small groups of girls. The Jean Hailes website hosts a range of resources specific for Aboriginal and Torres Strait Islander women including educational presentations for use by health professionals in individual or group sessions and patient resources such as pamphlets and videos and describes the use of artworks and illustrations by Indigenous artists and designers to improve acceptability of the resources [27].

- iv. *From the above information what are the knowledge gaps regarding menstrual health and hygiene literacy and education resources for Aboriginal women in Australia?*

There are several gaps in the evidence surrounding menstrual health literacy and education resources for Aboriginal women including, the appropriateness of existing programmes for Aboriginal women especially across the life span, how programmes can result in health engagement and behavioural change, the most effective platform for delivery of information and evaluation of the effectiveness of existing programmes and resources.

There are two educational programmes reported that involved delivery of the educational intervention to adolescents and young women, but did not include Aboriginal women or non-adolescent women. Roux et al. [5] specifically acknowledge the lack of culturally and linguistically diverse groups represented in their study sample. The grey literature gives several examples of menstrual education programmes [26, 27] but evaluation of their effectiveness or longer term follow up is not reported. Armour et al. [16] suggest that behaviour change educational models that support empowerment, critical thinking and action, along with longer term cohort student to review the lasting impact, are needed to evaluate these literacy programmes.

Although, A Plan International Global Report on period equity suggested that decolonising attitudes towards periods and culturally safe menstrual health education should be designed and led by Indigenous people to achieve period equity, there were very few examples provided [21]. Hall et al. [11] outline the need

for larger, longer-term studies and evaluation of programmes that include multiple geographical locations and involvement of Indigenous community controlled organisations to ensure cultural appropriateness.

The delivery approaches described above are community based, community specific and culturally acceptable, especially in the remote communities in which they are being delivered [23, 26, 27]. These approaches have not been formally evaluated or as far as the authors can find, delivered in metropolitan settings. In addition, the delivery of online programmes to Aboriginal women have not been reported or evaluated in the literature even though online delivery approaches and educational aids appear to be endorsed [5, 16, 26].

An article describing a workshop run with boys at a school in a remote community reports that there are gaps in knowledge for boys also, who appear to also face challenges of shame and embarrassment to discuss menstruation, but would like to know and share more [22]. Kang et al. [17] also describe the gaps in delivery of menstrual health information to male adolescents.

4 | Discussion

Improving menstrual health literacy is a key factor in addressing inequities in healthcare and improving menstrual health and hygiene. *For Aboriginal women added challenges surrounding provision of culturally appropriate menstrual health education and health literacy resources is a serious gap. Understanding and responding to these challenges will ensure health promotion initiatives are culturally focused and effective.* This scoping review aimed to explore the available literature surrounding menstrual health literacy programmes in Australia and then further explore this in relation to Aboriginal women, with an additional comprehensive exploration of the grey literature.

This scoping review identified key findings and gaps throughout the Australian literature that discussed menstrual health literacy, menstrual literacy programmes and resources, specifically for Aboriginal women. Findings included: adolescents and young women centred in the majority of health promotion and health literacy discussions; with gaps in menstrual health literacy for Aboriginal women compounded by psychosocial and cultural factors. The grey literature especially provided examples of menstrual health education and resources, and many recognised the key role of women in the Aboriginal context to deliver information. Gaps highlighted (Table 4) include the variable definitions of menstrual health literacy, how to develop education programmes that result in behaviour change, how to develop and deliver menstrual health education for Aboriginal women including across age groups and geographical regions, and whether online platforms are an appropriate delivery format.

The literature on menstrual health literacy and health education resources in Australia are centred around adolescent age groups and included two cohort menstrual health programme intervention studies [5, 16], a validation of a menstrual health literacy questionnaire [4] and Kang et al.'s [17] content analysis of

TABLE 4 | Identified gaps in knowledge and information derived from this scoping review.

Gaps in knowledge and information
Menstrual health literacy definition consensus
Programme content and integration of learning theory that supports behaviour change
Effective educational programmes and resources targeting Aboriginal women
Effective programmes for women across the lifespan or in different geographical locations
The components of effective and culturally appropriate health literacy resources
The application of internet technology and online platforms to effectively deliver menstrual health information

emails submitted to a teenage girls magazine. Although adolescents are receiving school-based health education, they are also influenced by external sources of health information, including media [5, 16–18]. The South Australia survey [19] reported that Indigenous respondents experienced unique and amplified challenges, and thus for Aboriginal women, the adolescent age group is important to consider in development and delivery of menstrual health resources and education. However, the menstrual management booklet from Central Australia [26] advocates for delivery of menstrual health and hygiene education before adolescence and reaching puberty. The prominent focus in the literature on adolescent age groups excludes and does not capture the potential gaps in menstrual health literacy and health education needs of Aboriginal women across broader age groups including into menopause.

The literature sources outlined the known benefits of improving menstrual health literacy and health education for women generally which included assisting in self-care [3, 5], help seeking [3, 16, 17] and identification of pathology [3, 5, 16]. In addition there are known gaps in menstrual health literacy and health education for women generally which included gaps in knowledge about the biological basis of the menstrual cycle [3], how to manage symptoms of the menstrual cycle [3, 11] and the variability in delivery and quality across school based programmes [1, 16]. The study by Hall et al. [11] was the only study in our sample that focused on Aboriginal and Torres Strait Islander women that discussed the lack of access to information that women in the included communities were facing. The grey literature revealed specific psychosocial and cultural factors which compounded access to menstrual health education, such as stigma and shame, and described the importance of cultural protocols surrounding women's health, and relationships of young people with teachers, school and broader community resources [19–21, 23, 25, 26]. Given the benefits of improving menstrual health literacy, addressing the factors that are impacting education access and engagement of Aboriginal women with their menstrual health highlight that this is an important issue to address.

Grey literature resources provided the most information on sources of menstrual health information being accessed by Aboriginal women, providing examples of culturally appropriate health literacy approaches and programmes. For women generally, health professionals appear to be a trusted source of information but may be underutilised. Kang et al. suggests that nurses and doctors should invite women and girls to discuss

their period, even if it is not explicitly raised in a consultation, to provide opportunities for engagement [17]. Key approaches drawn from the grey literature for Aboriginal women include the use of community based, designed and led programmes, that draw on local knowledge and social networks including peers, family members and senior community women. The community-based programmes described [25, 26] show creative and culturally safe ways of engagement with Aboriginal women but there is difficulty in generalising approaches due to absence of evaluation or broader description of use outside of these local communities. Evaluation of programmes in the longer term and in groups beyond adolescence is lacking in the literature overall.

This scoping review identified several gaps in the knowledge surrounding Aboriginal women's menstrual health literacy and health education resources including the variable definitions of menstrual health literacy which contributes to difficulty in evaluation of programmes and resources. In addition, variability in tools used to measure menstrual health literacy and experiences makes programme evaluation difficult. Another consideration is how to create programmes that result in behaviour change rather than only increased knowledge [16]. Additionally, Armour et al. [16] suggest that any educational programme is best complemented with education for teachers, parents and carers to ensure information and messaging is aligned. The peer-reviewed literature included in this review focussed on interventions in the adolescent age group, but programmes targeted to women across the life span and geographical locations requires further exploration. In addition, there is limited information on the development of programmes and resources for Aboriginal women specifically, including across age groups and geographical regions, and whether online platforms are an appropriate delivery format. The literature often discussed online educational resources which may offer accessibility but lacks the ability to be locally tailored. Kang et al. [17] and Raftos et al. [18] described the effects of magazines as a source of important and influential health information for women and girls generally. However, given the emergence of online media and social media platforms since the time of those publications, 2009 and 1998 respectively, the applicability of these findings may also be more suitably generalised to online engagement with health information. Although the grey literature offers insight into locally tailored approaches and programmes which may align with Aboriginal women's preferences, any future research should also explore the most appropriate format and content.

4.1 | Limitations

A scoping review is a useful tool in evaluating available information regarding a topic that has limited previous information. Limitations in this process include comparison of variable types of evidence sources that can make cross comparison difficult. However, given the paucity of available published information, the ability to highlight grey literature, in particular community led and culturally appropriate programmes that would otherwise be unpublished, is a strength of this review and an opportunity to reflect on and recognise the importance of community-based approaches to health engagement. The authors acknowledge this review focuses on Aboriginal women and suggest that future research focus on Torres Strait Islander women specifically recognising similarities and diversity that may exist.

4.2 | Conclusions

This scoping review not only explored the available literature surrounding menstrual health literacy programmes and resources in Australia but also interrogated how this can be improved for Aboriginal women. The several examples provided, which included community-led group programmes and resources designed in consultation with local women, highlighted the significance of the grey literature in providing valuable insights in relation to community based and culturally appropriate approaches. To build on this, further research is required to demonstrate how culturally safe menstrual health programmes and health literacy resources that address the psychosocial and cultural needs of Aboriginal women, can be appropriately co-designed, evaluated and adapted to the diverse geographical contexts, in partnership with and for Aboriginal women. Efforts towards this are needed and would be valuable in forming national health promotion initiatives and further research is planned to co-design accessible menstrual health resources with Aboriginal women to address these findings.

Acknowledgements

Open access publishing facilitated by The University of Western Australia, as part of the Wiley - The University of Western Australia agreement via the Council of Australian University Librarians.

Ethics Statement

The authors have nothing to report.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

References

1. E. Krusz, N. Hall, D. J. Barrington, et al., "Menstrual Health and Hygiene Among Indigenous Australian Girls and Women: Barriers and

Opportunities," *BMC Women's Health* 19, no. 1 (2019): 146, <https://doi.org/10.1186/s12905-019-0846-7>.

2. D. J. Barrington, H. J. Robinson, E. Wilson, and J. Hennegan, "Experiences of Menstruation in High Income Countries: A Systematic Review, Qualitative Evidence Synthesis and Comparison to Low- and Middle-Income Countries," *PLoS One* 16, no. 7 (2021): e0255001, <https://doi.org/10.1371/journal.pone.0255001>.

3. M. Armour, M. S. Hyman, M. Al-Dabbas, et al., "Menstrual Health Literacy and Management Strategies in Young Women in Australia: A National Online Survey of Young Women Aged 13-25 Years," *Journal of Pediatric and Adolescent Gynecology* 34, no. 2 (2021): 135-143, <https://doi.org/10.1016/j.jpjag.2020.11.007>.

4. F. Roux, H. J. Chih, J. Hendriks, and S. Burns, "Validation of an Adolescent Ovulatory Menstrual Health Literacy Questionnaire," *Australian and New Zealand Journal of Obstetrics and Gynaecology* 63, no. 4 (2023): 588-593, <https://doi.org/10.1111/ajog.13680>.

5. F. Roux, H. J. Chih, J. Hendriks, and S. Burns, "Mixed Method Evaluation of My Vital Cycles: A Holistic School-Based Ovulatory Menstrual Health Literacy Program," *International Journal of Environmental Research and Public Health* 20, no. 11 (2023): 5964, <https://doi.org/10.3390/ijerph20115964>.

6. Australian Institute of Health and Welfare, *Health Literacy* (AIHW, 2022), <https://www.aihw.gov.au/reports/australias-health/health-literacy>.

7. World Health Organisation, *Health Education: Theoretical Concepts, Effective Strategies and Core Competencies: A Foundation Document to Guide Capacity Development of Health Educators* (World Health Organization, 2012).

8. C. MacPhail and K. McKay, "Social Determinants in the Sexual Health of Adolescent Aboriginal Australians: A Systematic Review," *Health & Social Care in the Community* 26, no. 2 (2018): 131-146, <https://doi.org/10.1111/hsc.12355>.

9. M. Laverty, D. R. McDermott, and T. Calma, "Embedding Cultural Safety in Australia's Main Health Care Standards," *Medical Journal of Australia* 207, no. 1 (2017): 15-16, <https://doi.org/10.5694/mja17.00328>.

10. D. Ciccio, A. K. Doyle, C. H. M. Ng, and M. Armour, "Indigenous Peoples' Experience and Understanding of Menstrual and Gynecological Health in Australia, Canada and New Zealand: A Scoping Review," *International Journal of Environmental Research and Public Health* 20, no. 13 (2023): 6321, <https://doi.org/10.3390/ijerph20136321>.

11. N. Hall, "Women and Girls in Remote Indigenous Australian Communities: Cultural, Financial and Knowledge Barriers to Menstrual Hygiene Management," *Health Bulletin* 18, no. 2 (2018), <http://healthbulletin.org.au/articles/women-and-girls-in-remote-indigenous-australian-communities/>.

12. D. A. M. D. Tan, R. M. D. Haththotuwa, and I. S. M. D. Fraser, "Cultural Aspects and Mythologies Surrounding Menstruation and Abnormal Uterine Bleeding," *Best Practice & Research. Clinical Obstetrics & Gynaecology* 40 (2016): 121-133, <https://doi.org/10.1016/j.bpobgyn.2016.09.015>.

13. H. Arksey and L. O'Malley, "Scoping Studies: Towards a Methodological Framework," *International Journal of Social Research Methodology* 8, no. 1 (2005): 19-32, <https://doi.org/10.1080/1364557032000119616>.

14. M. D. J. Peters, P. McInerney, Z. Munn, A. C. Tricco, and H. Khalil, "Chapter 11: Scoping Reviews (2020 Version)," in *JBI Manual for Evidence Synthesis*, ed. M. Z. Aromataris (JBI, 2020).

15. A. C. Tricco, E. Lillie, W. Zarin, et al., "PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation," *Annals of Internal Medicine* 169, no. 7 (2018): 467-473, <https://doi.org/10.7326/m18-0850>.

16. M. Armour, K. Parry, C. Curry, et al., “Evaluation of a Web-Based Resource to Improve Menstrual Health Literacy and Self-Management in Young Women,” *Journal of Psychosomatic Research* 162 (2022): 111038, <https://doi.org/10.1016/j.jpsychores.2022.111038>.
17. M. Kang, B. Cannon, L. Remond, and S. Quine, “‘Is It Normal to Feel These Questions ...?’: A Content Analysis of the Health Concerns of Adolescent Girls Writing to a Magazine,” *Family Practice* 26, no. 3 (2009): 196–203, <https://doi.org/10.1093/fampra/cmp019>.
18. M. Raftos, D. Jackson, and J. Mannix, “Idealised Versus Tainted Femininity: Discourses of the Menstrual Experience in Australian Magazines That Target Young Women,” *Nursing Inquiry* 5, no. 3 (1998): 174–186, <https://doi.org/10.1046/j.1440-1800.1998.530174.x>.
19. H. Connolly, *Menstruation Matters—The Impact of Menstruation on Wellbeing, Participation and School Attendance* (Commissioner for Children and Young People SA, 2020).
20. South Australia Commissioner for Children and Young People, “What Young People Told Us About... Periods, Relationships and Their Sexual Health Education” (2021), <https://www.cyp.com.au/wp-content/uploads/2022/01/What-Aboriginal-Young-People-Told-Us-About%E2%80%A6Periods-Relationships-and-their-Sexual-Health-Education.pdf>.
21. Plan International, “A Tough Period: Global Report (Australia Report)” (2023), <https://www.plan.org.au/wp-content/uploads/2023/05/A-Tough-Period-Australia-Report.pdf>.
22. M. King and N. Hall, “‘How Can I Help Mum at That Time of the Month?’: Boys’ Voices on Menstrual Health in a Remote Indigenous Town” (2021), <https://chalicefoundation.org/2021/08/05/how-can-i-help-mum/>.
23. Flinders University, *Minymaku Kutju Tjukurpa. Women Only Story’. Standard Treatment Manual for Women’s Business in remote and Aboriginal health services in central and northern Australia*, 7th ed., (Flinders University, 2022).
24. M. J. Page, J. E. McKenzie, P. M. Bossuyt, et al., “The PRISMA 2020 Statement: An Updated Guideline for Reporting Systematic Reviews,” *BMJ* 372 (2021): n71, <https://doi.org/10.1136/bmj.n71>.
25. E. Haskin, “Fighting Shame and Challenges of Menstruation in Isolated Australian Communities” (2020), <https://www.abc.net.au/news/2020-02-20/fighting-the-shame-of-menstruation-in-remote-communities/11963334>.
26. Central Australian Youth Link-Up Service, *MHM: Menstrual Hygiene Management Guide* (Central Australia, 2019).
27. J. Hailes, “Aboriginal and Torres Strait Islander Resources Online: Jean Hailes”, July 4, 2023, <https://www.jeanhailes.org.au/resources/aboriginal-and-torres-strait-islander-resources>.

Appendix A

PRISMA Checklist

Preferred reporting items for systematic reviews and meta-analyses extension for scoping reviews (PRISMA-ScR) checklist.

Section	Item	Prisma-SCR checklist item	Reported on page #
Title			
Title	1	Identify the report as a scoping review.	1
Abstract			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results and conclusions that relate to the review questions and objectives.	2
Introduction			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	3
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts and context) or other relevant key elements used to conceptualise the review questions and/or objectives.	4
Methods			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	5
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language and publication status), and provide a rationale.	5
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	6
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Appendix B
Selection of sources of evidence [†]	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	6 & 7
Data charting process [‡]	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	7
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	7
Critical appraisal of individual sources of evidence [§]	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	Not applicable
Synthesis of results	13	Describe the methods of handling and summarising the data that were charted.	7

Section	Item	Prisma-SCR checklist item	Reported on page #
Results			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	8
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	Table 2
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	Not applicable
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	Table 2
Synthesis of results	18	Summarise and/or present the charting results as they relate to the review questions and objectives.	9–14
Discussion			
Summary of evidence	19	Summarise the main results (including an overview of concepts, themes and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	15–18
Limitations	20	Discuss the limitations of the scoping review process.	18
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	18
Funding			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	1

Source: Tricco et al. [15].

Abbreviations: JBI = Joanna Briggs Institute; PRISMA-ScR = preferred reporting items for systematic reviews and meta-analyses extension for scoping reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms and websites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results and relevance before using it to inform a decision. This term is used for items 12 and 16 instead of 'risk of bias' (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion and policy document).

Appendix B

Full Example of an Executed Search

MEDLINE (Ovid) SEARCH 10th January 2024.

Database:

Ovid MEDLINE(R) ALL <1946 to January 08, 2024>.

#	Query	Results from 10 January 2024
1	Menstruation/	16 534
2	Menstrua*.mp. [mp = title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]	72 542
3	Dysmenorrhea/	4687
4	Dysmenorrhea.mp. [mp = title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]	7968
5	Dysmenorrhoea.mp. [mp = title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]	1361
6	Menarche/	5473
7	1 or 2 or 3 or 4 or 5 or 6	81 627
8	Health Education/	64 011
9	Health Literacy/	9 595
10	Health Promotion/	82 144
11	Patient Education as Topic/	88 391
12	(health education or health literacy).ab. or (health education or health literacy).ti.	52 234
13	8 or 9 or 10 or 11 or 12	260 244
14	exp Australia/	173 262
15	(Australia* or Queensland or Victoria or Tasmania or Northern Territory or New South Wales).mp. [mp = title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms, population supplementary concept word, anatomy supplementary concept word]	249 177
16	14 or 15	249 177
17	7 and 13 and 16	21

Appendix C

Excluded Database References With Justification for Exclusion

Article name	Reason for exclusion
Alfred, A. and K. Ried (2011). Traditional Chinese Medicine: Women's Experiences in the Treatment of Infertility. <i>Australian Family Physician</i> , 40(9): 718–722.	Focussed on fertility specifically.
Armour M., Dahlen H.G., Smith C.A. (2016) More Than Needles: The Importance of Explanations and Self-Care Advice in Treating Primary Dysmenorrhea with Acupuncture. <i>Evid.-Based Complement. Altern. Med.</i>	Focussed on specific menstrual pathology.
Bourdillon C. (1982). Natural family planning. <i>Cent. Afr. J. Med.</i> 28(11): 284–287.	Focussed on fertility specifically.
Button B.J., Patel N. (2004). Phytoestrogens for osteoporosis. <i>Clin. Rev. Bone Miner. Metab</i> , 2(4): 341–356.	Not focussed on menstrual health literacy resources.
Ching H.L., Burke V., Stuckey B.G. (2007). Quality of life and psychological morbidity in women with polycystic ovary syndrome: body mass index, age and the provision of patient information are significant modifiers. <i>Clin Endocrinol (Oxf)</i> . 66(3): 373–379.	Focussed on specific menstrual pathology. Not focussed on Aboriginal women.
Ciccia, D., et al. (2023). Indigenous peoples' experience and understanding of menstrual and gynecological health in Australia, Canada and New Zealand: A scoping review. <i>Int J Environ Res Public Health</i> , 20(13).	Format is a scoping review. Only original articles included.
Cole JB, Beighton FC, Jones IH. (1975). Contraceptive practice and unplanned pregnancy among single university students. <i>Br Med J</i> , 4(5990): 217–219.	Related to contraception specifically.
de Costa, C. M. (2011). Out of the shadows—changes in women's reproductive health. <i>Med J Aust</i> , 195(10): 620.	Focussed on abortion care specifically.
Dickson, S. & Wood, R. (1995). The perceptions, experiences and meanings rural girls ascribe to menarche—Implications for teachers/teacher training. <i>Paper presented at the Australian Association for Research in Education Conference, Hobart, Tasmania.</i>	Not focussed on menstrual health literacy resources. Not focussed on Aboriginal women.
Duffy, B., Fotinatos, N., Smith, A., Burke, J. (2011). Puberty, health and sexual education in Australian regional primary schools: Year 5 and 6 teacher perceptions. <i>Sex Education</i> , 13:2, 186–203.	Not related to menstrual health literacy resources specifically. Focus is sexual health more broadly.
Elgendy I.Y., Mansoor H., Pepine C.J. (2021). Reproductive lifespan and incident stroke risk among post-menopausal women: Is it time for sex-specific risk prediction tools? <i>Int. J. Cardiol.</i> 328: 218–219.	Focussed on post-menopausal women and stroke risk specifically.
Graham, M. et al. (2001). "Satisfaction with the Outcomes of Hysterectomy" In: <i>Politics, Action and Renewal: 4th Australian Women's Health Conference—Proceedings. Strathfieldsaye, Vic: Australian Women's Health Network, 2001.</i>	Not focussed on menstrual health literacy resources.
Haggerty, C. L. and R. B. Ness (2006). Epidemiology, pathogenesis and treatment of pelvic inflammatory disease. <i>Expert Rev. Anti Infect Ther</i> 4(2): 235–247.	Focussed on specific non-menstrual pathology.
Halliday L, Boughton M. (2009). Premature menopause: exploring the experience through online communication. <i>Nurs Health Sci</i> 11(1): 17–22.	Focussed on specific menstrual pathology. Not focussed on menstrual health literacy resources.
Hammarberg K., de Silva R. (2022). Parenthood aspirations and understanding of factors that affect the chance of achieving them: A population survey. <i>Reprod. Biomed. Soc. Online</i> .	Not focussed on menstrual health literacy resources specifically.
Hammarberg K, Setter T, Norman RJ, Holden CA, Michelmore J, Johnson L. (2013). Knowledge about factors that influence fertility among Australians of reproductive age: a population-based survey. <i>Fertil Steril</i> , 99(2): 502–507.	Exploring knowledge levels rather health literacy resources. Focussed on fertility specifically.
Harding, C. and J. Ritchie (2003). Contraceptive practice of women with opiate addiction in a rural centre. <i>Aust J Rural Health</i> 11(1): 2–6.	Focussed on contraception specifically.
Hawkey AJ, Ussher JM, Perz J. (2020). "I Treat My Daughters Not Like My Mother Treated Me": Migrant and Refugee Women's Constructions and Experiences of Menarche and Menstruation. In: Bobel C, Winkler IT, Fahs B, et al., editors. <i>The Palgrave Handbook of Critical Menstruation Studies</i> [Internet]. Singapore: Palgrave Macmillan.	Not focussed on menstrual health literacy resources. Not focussed on Aboriginal women.
Hawkey, Alexandra J, et al. (2017). Experiences and Constructions of Menarche and Menstruation Among Migrant and Refugee Women. <i>Qualitative health research</i> 27(10).	Not focussed on health literacy resources. Not focussed on Aboriginal women.

Article name	Reason for exclusion
Hillen, Thirza IJ, et al. (1999). Primary Dysmenorrhea in Young Western Australian Women: Prevalence, Impact, and Knowledge of Treatment. <i>Journal of Adolescent Health</i> 40, 25(1).	Focussed on specific menstrual pathology. Not focussed on Aboriginal women.
Hobbs, M., et al. (2009). The emergency contraceptive pill rescheduled: a focus group study of women's knowledge, attitudes and experiences. <i>J Fam Plann Reprod Health Care</i> , 35(2): 87–91.	Focussed on contraception specifically.
Johnson L., Hammarberg K., Crocker E., et al. (2016). "Your Fertility"-evaluation of a health promotion program to improve awareness of factors that affect fertility. <i>Hum. Reprod.</i> 31(S1): i343–i344.	Focussed on fertility specifically.
Ladjali M, Rattray TW, Walder RJ. (1993). Female genital mutilation. <i>BMJ</i> 307(6902): 460.	Not related to menstruation.
Leung, J., et al. (2014). Knowledge of contraceptive methods and services among tertiary students in far North Queensland. <i>Aust NZ J Obstet Gynaecol</i> , 54(4): 386–389.	Focussed on contraception specifically.
Mazza D. (2023). Reimagining medical abortion in Australia: what do we need to do to meet women's needs and ensure ongoing access? <i>Med. J. Aust.</i> 218(11).	Focussed on abortion care specifically.
McGregor, F.A., Unsworth, C.A. (2022). Menstrual hygiene management strategies used by women who are blind or have low vision. <i>Scandinavian Journal of Occupational Therapy</i> 29(7): 598–610.	Not focussed on menstrual health literacy resources.
McNamee, K., Bateson, D., Pearson, S. (2017). Combined oral contraceptives the GP consultation. <i>Med. Today</i> 18(8): 51–56.	Focussed on contraception specifically.
Metusela, C., et al. (2017). "In My Culture, We Don't Know Anything About That": Sexual and Reproductive Health of Migrant and Refugee Women. <i>Int J Behav Med</i> 24(6): 836–845.	Not focussed on Aboriginal women.
Meyer T. (2023). New JSAMS Article Categories and a New Type of Training. <i>J. Sci. Med. Sport</i> 26(7): 335.	Not related to menstrual health literacy resources.
Miller, Stephanie M, et al. (2012). Energy Deficiency, Menstrual Disturbances, and Low Bone Mass: What Do Exercising Australian Women Know about the Female Athlete Triad? <i>International Journal of Sport Nutrition and Exercise Metabolism</i> 22(2).	Focussed on menstrual pathology. Not focussed on Aboriginal women.
Miller C, Murtagh J. (1992). Combined oral contraception. <i>Aust Fam Physician</i> 21(12): 1787–1788.	Focussed on contraception specifically.
Mishra G.D., Dobson A.J. (2000). Schofield M.J. Cigarette smoking, menstrual symptoms and miscarriage among young women. <i>Aust. New Zealand J. Public Health</i> 24(4): 413–420.	Focussed on specific menstrual pathology.
Morgan, D. (2017). 'Sexual and Reproductive Health Education Project for Aboriginal and Torres Strait Islander Young People in the Australian Capital Territory (ACT)'. <i>Australian Nursing & Midwifery Journal</i> 25(3).	Excluded after review at full text level. Focussed on sexual health screening and visiting a sexual health clinic. Not related to menstruation.
Morris, J. (1995). Sextalk for parents and teenagers. <i>Australian School Library Association</i> 9(3): 44–44.	Unable to access full text in archives. Record only.
Murtagh J. (1993). Patient education. Tubal ligation. <i>Aust Fam Physician</i> 22(4): 611.	Focussed on tubal ligation specifically.
Murphy N., Williams H., Nguyen J., et al. (2021). Condom use in young women using long-acting reversible contraception (LARC): a qualitative study. <i>Cult Health Sex</i> 23(8):1153–1164.	Focussed on sexual health rather than menstrual health literacy resources.
New South Wales. Aboriginal Health Promotions, S. (1990). "Koori womens health/ Aboriginal Health Promotions Section, NSW Department of Health." Pamphlets with information and contact addresses.	Health promotion material but pamphlets only contain phone numbers and addresses for services. No written educational information.
O'Reilly, K., Wilson, N., Kwok, C., Peters, K. (2023). An Exploration of Women's Sexual and Reproductive Health Following Traumatic Brain Injury. <i>Journal of Clinical Nursing</i> , 901, 32(5–6).	Not focussed on menstrual health literacy resources.
Piper, K. (2009). Personal development, active participation in physical activity and girls. <i>Active and Healthy</i> 16(1): 6–7.	Not focussed on menstrual health resources.
Ramsay C., Hennegan J., Douglass C.H., Eddy S., Head A., Lim M.S.C. (2023). Reusable period products: use and perceptions among young people in Victoria, Australia. <i>BMC Women's Health</i> 23(1): no pagination.	Not focussed on menstrual health literacy resources.

Article name	Reason for exclusion
Reid J. (1979). Cultural factors affecting the use of family planning services in an Aboriginal community. <i>Med J Aust</i> 1(S2): 1–4.	Focussed on family planning specifically.
Roux, F., et al. (2019). “Developing and trialing a school-based ovulatory-menstrual health literacy programme for adolescent girls: a quasi-experimental mixed-method protocol.” <i>BMJ Open</i> 9(3): e023582.	Excluded after review at full text level as only a description of a research protocol.
Steel, A, R Reid, and J Schloss. (2018). ‘Characteristics of Naturopathic Texts’ for the Management of Endometriosis over the Last 200 Years” <i>Journal of the Australian-Traditional Medicine Society</i> 24(4), 230–236.	Focussed on menstrual pathology. Not focussed on Aboriginal women.
Rodgers, J. and J. Lipscombe. (2020). The nature and extent of help given to women with intellectual disabilities to manage menstruation. <i>IELAPA</i> ; 45–52.	Not focussed on menstrual health resources. Not focussed on Aboriginal women.
Sargeant, D. (2020). Sexual health as a valid component of health education. <i>IELAPA</i>	Unable to access full text in archives. Record only.
Seear K. (2009). The etiquette of endometriosis: Stigmatisation, menstrual concealment and the diagnostic delay. <i>Soc. Sci. Med.</i> 69(8): 1220–1227.	Focussed on specific menstrual pathology.
Sheffield, Jeanie and Angela Vivanti. (2001). ‘Height, Weight and Body Mass Index Distribution Data for Queensland Schoolchildren Aged Ten to 18 Years’ <i>Australian Journal of Nutrition and Dietetics</i> 58(2): 121.	Not focussed on menstrual health literacy resources.
Steel A., Adams J., Sibbritt D. (2017). The Characteristics of Women Who Use Complementary Medicine While Attempting to Conceive: Results from a Nationally Representative Sample of 13 224 <i>Australian Women</i> . <i>Women’s Health Issues</i> 27(1): 67–74.	Focussed on conception and sexual health specifically.
Sutton C. (2011). Supporting women through the ages. <i>Aust. J. Pharm.</i> 92(1090): 37–42.	Unable to access full text.
Turner J.V. (2016). Fertility-awareness practice and education in general practice. <i>Aust. J. Prim. Health</i> 22(5): 375–376.	Focussed on fertility specifically.
Walsh M, Tonti-Filippini N. (1998). The billings ovulation method. What are the benefits? <i>Aust Fam Physician</i> 27(12): 1082–1083.	Focussed on fertility specifically.
Weisberg E, Merki-Feld GS, McGeechan K, Fraser IS. (2015). Randomized comparison of bleeding patterns in women using a combined contraceptive vaginal ring or a low-dose combined oral contraceptive on a menstrually signaled regimen. <i>Contraception</i> 91(2): 121–126.	Focussed on contraception specifically