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Health Information Seeking Behavior Among Perinatal Women: A Systematic Review

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Abstract

The health of perinatal women is critical to maternal well-being and infant development. Understanding how perinatal women seek health information is essential for providing effective antenatal and postnatal care. However, there is a lack of systematic reviews on this topic. This study aimed to conduct a comprehensive literature review of existing research following the PRISMA-SCR guidelines. The results showed that perinatal women commonly seek pregnancy-related health information. Interpersonal sources were identified as the primary and most trusted sources of information. The study also identified various factors and barriers that influence health information seeking, including individual, socio-cultural, structural, and information-related factors, with personal responsibility for health being an influential factor that has not been emphasized previously. It provides valuable insights into the health information seeking behavior of perinatal women. The influence of personal health responsibility, social power dynamics and socio-cultural norms on health information seeking needs to be further investigated.

Keywords: perinatal women, health information, information seeking, systematic review

1. Introduction

Pregnancy and childbirth are important life stages for women (Bianchi et al., 2016; Kamali et al., 2018). Perinatal women are more vulnerable to health problems (Liu et al., 2020), due to biological, physiological, social, emotional changes and objective exposures (Garcia & Yim, 2017). United Nations News (2023) showed that in many parts of the world, maternal health setbacks have contributed to a woman dying during pregnancy or childbirth approximately every two minutes. The health of perinatal women is directly related to the healthy development of fetuses and newborns and is an important area of public health (Ojaperv & Virkus, 2023). Seeking credible and useful health information is crucial for expectant mothers. It can help them make informed decisions (Kamali et al., 2018), put themselves in a good mood (Zhu et al., 2019), manage pregnancy problems (Kaaya et al., 2021), keep themselves and their fetuses healthy, and prevent recurrence of pregnancy problems or complications (Javanmardi et al., 2022).

Rapid advances in information technology and the proliferation of smartphone devices have increased people's access to health information. However, the large amount of information, especially the presence of irrelevant information, creates an information overload (Chung et al., 2023), and increases the cost of retrieving valid and desired information for users (Rodger et al., 2013). This situation can create stress for users and prompt them to develop an intention for information avoidance behavior (Pang & Ruan, 2023). Understanding perinatal women's health information seeking behavior (HISB), the types of health information they seek, the sources of health information they obtain, and how they evaluate these information can effectively provide them with high quality and desired health information to help them communicate effectively with health professionals (Dol et al., 2022), and access high quality antenatal and postnatal care. Given the significant impact of HISB on perinatal women's health outcomes (Huberty et al., 2013; Mackintosh et al., 2020), there is a need to conduct a comprehensive and systematic review of their HISB.

Over the past decade, there has been a growing recognition of the importance of perinatal women's HISB. The existing literature primarily focuses on understanding health information needs (Grimes et al., 2014; Rotich & Wolvaardt, 2017),

information sources utilized (Vogels-Broeke et al., 2022), motivators and barriers influencing HISB (Kamali et al., 2018), and interventions to promote effective health information communication (Kaaya et al., 2021). Although there are some studies on perinatal women's HISB, there are few systematic reviews conducted on this topic. Javanmardi et al. (2018) conducted a systematic review of pregnant women's internet use for health information seeking, emphasizing that healthcare providers should provide reliable online educational resources. Sayakhot and Carolan-Olah (2016) reviewed internet usage among pregnant women for seeking pregnancy-related information, suggesting that most women did not discuss the information they retrieved from the internet with their healthcare providers. Ghiasi (2021) reviewed pregnant women's health information needs, sources of information, and barriers to accessing health information. Conrad (2022) conducted a systematic review investigating the 'who, where, what, why, and how' of information-seeking behavior on the internet among pregnant women. Despite the valuable insights provided by these studies on pregnant women's HISB, there exist several limitations within the current body of research. Firstly, these studies primarily focus on pregnant women, neglecting to examine postpartum women's HISB. Secondly, the focus of existing studies is primarily on pregnant women's internet-based health information seeking and does not provide a comprehensive analysis of the multiple sources of information. Furthermore, although these studies highlight the unreliability of internet information, they do not explore the sources that pregnant women perceive as reliable. The HISB of perinatal women has not yet been adequately studied. There remains a significant gap in the literature regarding the HISB of perinatal women.

Considering the limited research on perinatal women's HISB. There is a need to conduct a systematic review of the existing literature to provide insight into the current state of research on perinatal women's HISB. To fill this gap, this study focuses on women's HISB throughout the perinatal period. Specifically, this review study aims to answer the following questions:

RQ1: What types of health information do perinatal women seek?

RQ2: What sources of information do perinatal women use to seek health information?

RQ3: How do perinatal women evaluate these sources of information?

RQ4: What are the factors influencing perinatal women's HISB?

RQ5: What are the barriers influencing perinatal women's HISB?

2. Methodology

2.1 Search Strategy

The study follows the guidelines outlined in the PRISMA-ScR as a framework for conducting the systematic review (Page et al., 2021). Article were searched from APA PsycInfo, Scopus, MEDLINE, Web of Science, and PubMed databases. These databases are the most powerful databases for the HISB conducted in the past (French-Lawyer et al., 2021), and warrant coverage of the maximum number of studies under the topic of investigation.

The procedure followed a sequential process encompassing study identification, screening, eligibility, and included (Ferrari, 2015). Additional articles that met our criteria were identified by searching the reference list of articles included in this review.

2.2 Search Terms

The perinatal period is an important period of pregnancy and the postpartum period (O'Hara & Wisner, 2014), referring to pregnancy and the first year postpartum (Garcia & Yim, 2017). To cover women's health information seeking during both pregnancy and postpartum period. The search terms used were: ("health information") AND (("pregnancy" OR "pregnant" OR "peripartum" OR "perinatal" OR "antenatal" OR "prenatal" OR "postpartum" OR "postpartum" OR "antepartum" OR "expectant" OR "gestation*") AND ("women" OR "mother* " OR "matern*") AND ("seek*" OR "search" OR "retrieve" OR "find" OR "access"). An electronic search was carried out in March 2023.

2.3 Inclusion and Exclusion Criteria

The inclusion criteria for articles were as follows: (a) focus on the behavior of perinatal women when actively and intentionally seeking health-related information (Lambert & Loiselle, 2007). (b) focus on perinatal women refers to the period from the beginning of pregnancy to approximately one year after giving birth. (c) published in peer-reviewed journals. (d) written in English.

Exclude articles based on the following criteria: (a) Inappropriate research topics: studies are not directly related to perinatal women's HISB. (b) Non-peer reviewed Journal. (c) Literature reviews were excluded. (d) Non-active health information seeking behavior: e.g., cases where individuals were exposed to information without any specific intention.

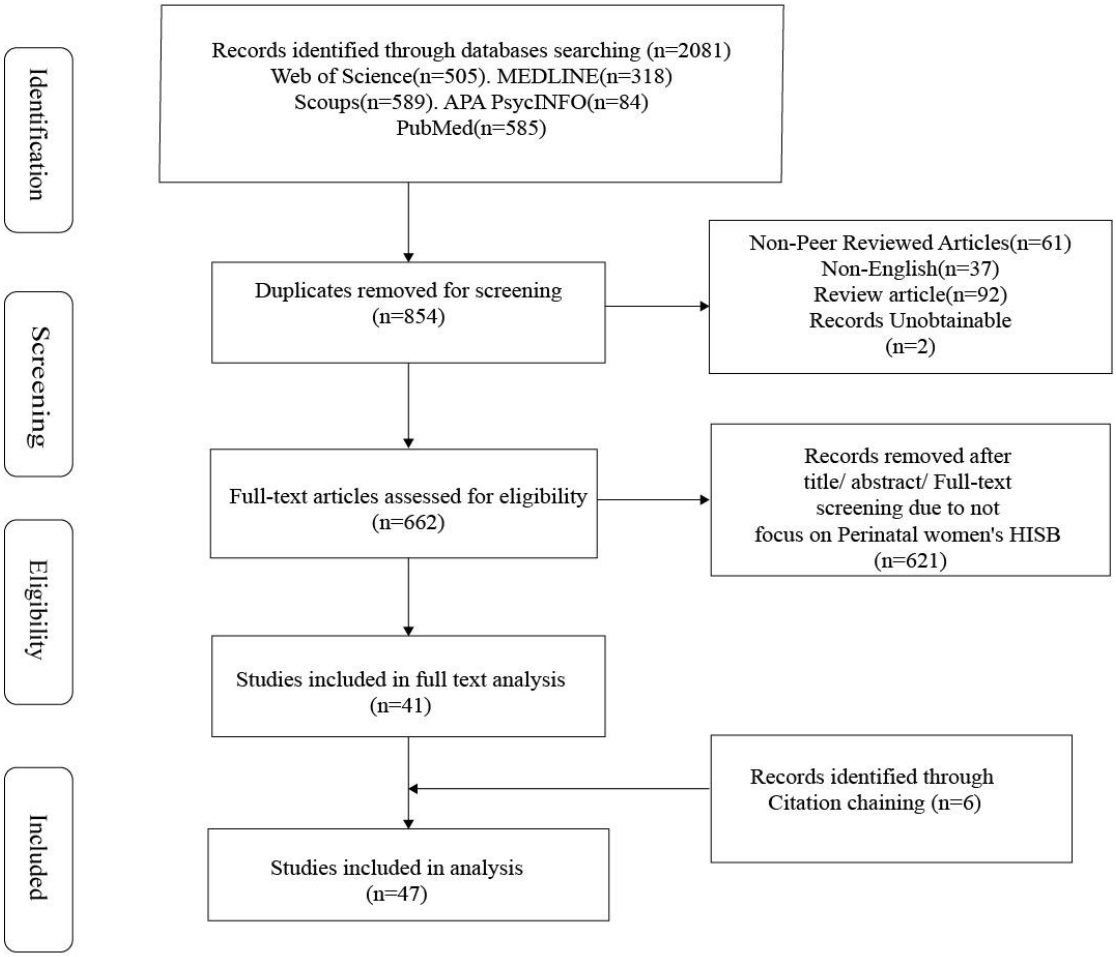

Figure 1. PRISMA flow diagram for the systematic review

2.4 Screening Procedure

The article screening process followed predetermined eligibility criteria. Figure 1 shows the screening procedure. Initially, an extensive database search strategy was employed, yielding a total of 2,081 publications. 41 articles were retained after a layer-by-layer screening based on the criteria. To minimize the risk of excluding relevant literature, the authors employed citation chaining. Through citation tracking with the assistance of Google Scholar, 6 more eligible articles were identified. In total, 47 articles were ultimately selected for the systematic scoping review.

2.5 Data Analysis

Data analysis of the study comprised research profiling and thematic analysis utilizing Excel and NVivo 12 software. Research profiles provides a comprehensive view of the area under study by scanning a large body of literature (Porter et al., 2002). In our study, research profiling was used to report on the annual progression of articles, country level research, data collection methods, and sample characteristics. Thematic analysis involved identifying themes and creating categories based on relevant extracted information aligned with the research questions. The process followed a systematic procedure. beginning with a careful reading of each article to understand its main content. An inductive approach was then used to identify and document statements that provided insights into different aspects of the concept. Key points were continuously organized and reorganized to develop a clear and comprehensive description of each aspect. Ongoing discussions were held to ensure consistent and accurate coding of the articles. The collected data was then categorized, and thematic analysis was conducted by classifying the data into sub-themes and main themes. Appendix A lists all the articles with the number, author, year, and title under review.

3. Results

3.1 Research Profiles

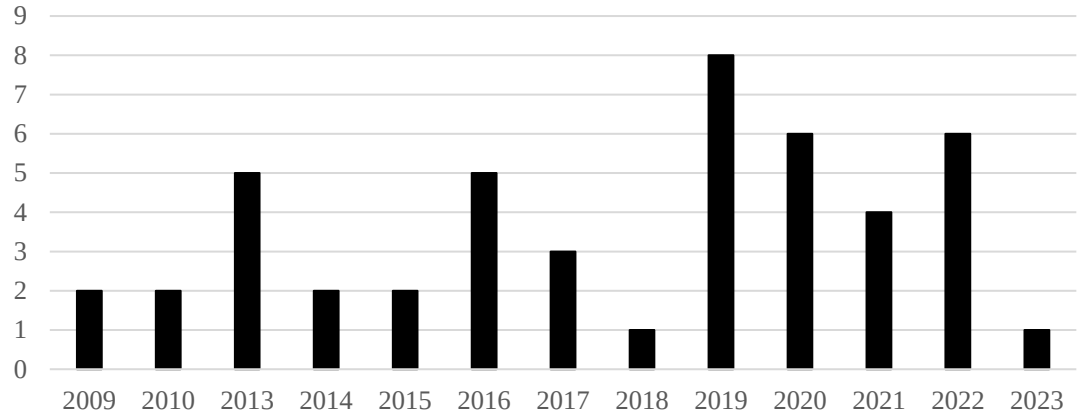

Figure 2. Article publication year

After screening, the final sample consisted of 47 articles. Figure 2 shows that the selected articles were published between 2009 and 2023. Notably, most articles (n=43) were published in the last decade. It indicates the growing importance of research on HISB among perinatal women.

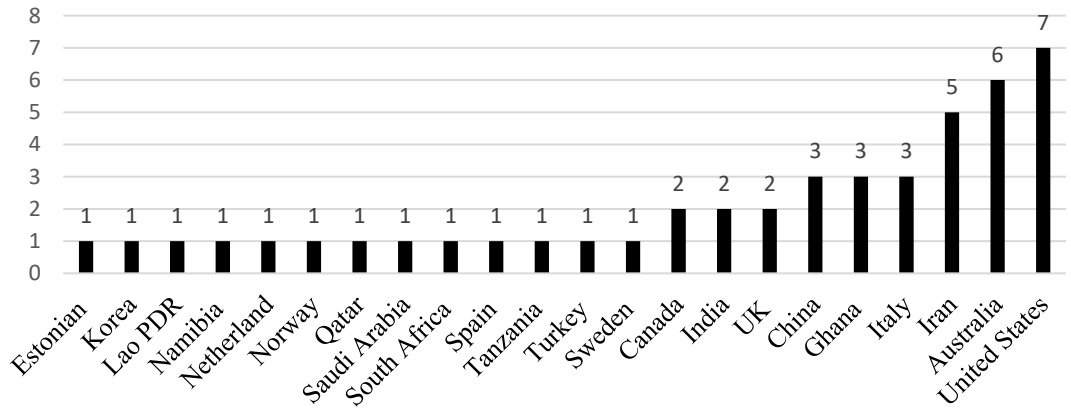

Figure 3. Geographic distribution of studies. Note: The figure adds up to 46 articles as the country of data collection was not specifically mentioned in 1 article

The geographic distribution of the analyzed articles is depicted in Figure 3, highlighting contributions from various countries. Out of the 47 articles, one did not specify a location. The United States (n=7) had the highest number of articles, followed by Australia (n=6) and Iran (n=5).

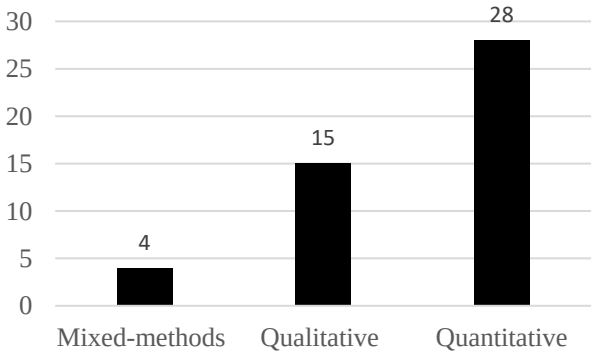

Figure 4. Research methods

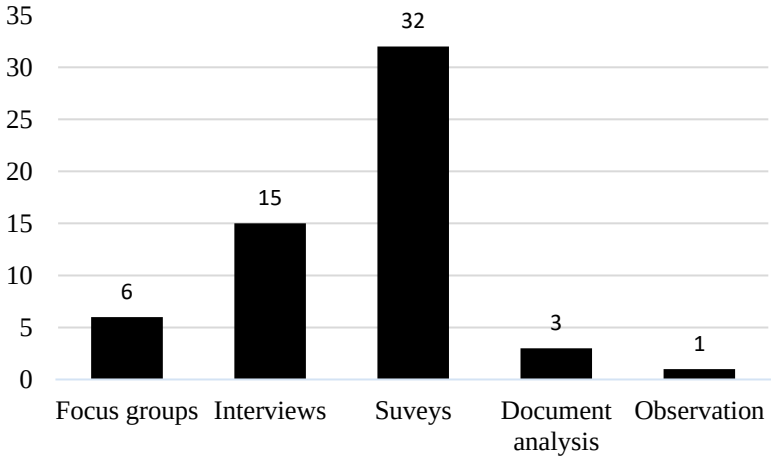

Figure 5. Data collected methods

Figure 4 shows the distribution of research methodologies used in the 47 selected studies. Of these, 28 studies adopted quantitative approaches, 15 studies used qualitative methods, and 4 studies employed mixed methods designs. Regarding data collection methods, Figure 5 indicates that surveys were the primary approach in 32 studies, followed by interviews in 15 studies and focus groups in 6 studies.

In terms of sample characteristics, 37 studies recruited pregnant women as participants, 3 studies focused on postpartum women, while 7 studies had mixed samples of pregnant and postpartum participants. Of these studies, 31 studies focused on general pregnant women, 11 studies targeted low-income or rural pregnant women, 4 studies examined pregnant adolescents or teenagers, and 1 study focused on pregnant women with disabilities.

3.2 Types of Health Information

Over half of the studies (n=30) reported the types of information sought by perinatal women, based on the different stages of the perinatal period: pregnancy, childbirth, and postpartum. The study categorized the types of health information into four main groups: pregnancy-related, childbirth-related, postpartum-related, and others.

Table 1 shows that 35 specific types of health information were classified. Among these categories, nutrition (n=19) was the most commonly reported, followed by fetal development (n=16) and daily life issues (n=15). These top three categories are all pregnancy-related health information. Conversely, the least frequently reported were the effects of pre-existing, health conditions, sleep, neonatal complications, social resources and support, and COVID-19, each with only 1 study. Regarding health information related to childbirth, the main focus was on the mode and process of delivery (n=8). For postpartum-related health information, the topic of greatest interest was infant feeding (n=13).

Table1. Types of health information

	Type of health information	No.of studies	References
Pregnancy-related	Mental health	5	22,27,33,41,43
	Pregnancy symptoms	7	23,24,27,31,34,43,47
	Pregnancy complications	11	2,3,4,10,15,23,24,26,31,34,47
	Maternal Healthcare	8	3,14,15,22,23,28,43,47
	Medications during pregnancy	8	3,23,24,27,33,34,41,43
	Daily life issue	15	2,3,4,9,15,22,23,24,27,31,33,34,41,43,47
	Tobacco, alcohol, and illegal drug use	6	23,24,33,41,43,47
	Gestational weight gain	5	9,24,33,41,46
	Fetal development	16	2,3,4,15,22,23,24,26,27,30,31,33,34,41,43,47
	Marital and sexual relationships	8	3,4,10,23,24,33,34,41
	Nutrition	19	3,4,9,10,15,19,22,23,24,25,26,29,31,33,34,41,42,43,47
	Stages of Pregnancy	2	4,24
	Physical changes during pregnancy	6	4,22,23,24,30,34
	Attention and precaution matters	7	11,15,22,23,24,33,41
	Test and screening during pregnancy	7	2,23,24,31,33,41,43
	Prenatal training and classes	2	23,47
	Vaccination in pregnancy	3	4,13,23,
	Abortion	3	23,24,43
	Effect of pre-existing health	1	24
	sleep	1	22
	Birth control	3	33,41,43
Childbirth-related	Preparation for delivery	3	3,22,47
	Hospital and doctor choices	7	4,15,23,24,27,31,47
	labor pain relief	5	4,23,26,31,38
	Mode and process of delivery	8	4,15,23,24,31,38,43,47
	Delivery stories	5	15,26,31,38,47
Postpartum-related	Infant feeding	13	2,3,4,15,17,22,23,26,31,32,33,41,43
	Postpartum mother care	4	2,4,23,27
	Infant care	8	3,4,15,17,23,31,43,47
	Maternal recovery	3	15,31,47
	Neonatal complications	1	31
	Complications after delivery	2	4,23
Others	Social resources and support	1	43
	Domestic abuse	2	33,41
	COVID-19	1	27

3.3 Sources of Health Information

In the articles reviewed. 26 studies examined the health information sources utilized by perinatal women. It is worth noting that some studies focused on online health information seeking without detailing the specific sources. Therefore, the count of information sources reported in these articles was not included.

As shown in Table 2, Health information sources used by perinatal women can be categorized as online sources, interpersonal sources, traditional media, organizations, and direct experience. The results show that interpersonal sources play a central role as sources of health information. All 26 studies reported healthcare professionals, friends/family/peers/relatives as sources of health information for perinatal women. Printed materials were reported in 21 articles. General internet searches (internet and search engines were used interchangeably in some articles) were also reported in 18 articles. Sources mentioned less frequently were helpline numbers (n=3), online video sites (n=2), and religious organizations (n=2).

Table 2. The sources of health information

	Source of health information	No.of studies	References
Online resources	General internet search	18	2,3,4,6,7,12,17,19,23,24,27,32,34,38,41,42,43,46
	Social media (Facebook, Instagram, and Twitter)	10	4,6,12,17,22,27,34,38,45,46
	Health website	11	2,4,12,17,19,27,30,32,38,42,45
	Mobile application	8	6,7,12,17,22,30,34,45
	Other online sources	10	2,4,9,1217,32,34,38,45,46
Interpersonal sources	Healthcare professionals (Midwives/ Nurses /General practitioners/family doctors/obstetricians/pharmacists/physicians/ herbalists/Traditional birth attendants)	26	2,3,4,6,7,9,10,12,17,19,22,23,24,27,28,30,32,33,34,35,38,41,42,43,45,46
	Friends/family /peers/relatives	26	2,3,4,6,7,9,10,12,17,19,22,23,24,27,28,30,32,33,34,35,38,41,42,43,45,46
Traditional media	Helpline phones	3	12,23,30
	TV/radio/Film/CD	14	2,3,4,6,7,12,23,24,27,32,33,41,45,46
	Printed materials (Books/newspapers/magazines/ brochures)	21	2,3,4,7,9,12,17,19,22,23,24,27,32,33,34,35,38,41,42,45,46
	General mass media	5	6,23,28,38,43
Organizations	Talks/meetings/ activity /training classes given by clinics, hospitals, health centers, community.	12	2,3,4,7,12,17,23,33,34,38,41,45
	Religious organizations	2	12,23
Direct experience	Previous personal experiences /knowledge	5	4,7,12,23,34

Table 3. The credibility of health information source

	Health information sources	Credibility examined in different studies	References
Online sources	General internet search	Internet (partially reliable)	38
		Internet (reliable)	15,26
	Website/social media/Online video site	Sites run by health professionals (reliable)	19
		General digital sources (such as websites, social media, Netflix, and apps) (unreliable)	37,45
Interpersonal source	Healthcare professionals	Health care provider/doctors /midwives / obstetricians / gynecologists (reliable)	5,7,20,22,24, 34,37,35
	Friends/family member	Husband (reliable)	10
		Mother(reliable)	35
Traditional media	Magazines/radio	Radio broadcasts (the least reliable)	24,34
		Magazines (unreliable)	24

3.4 Credibility of Health Information Sources

Among the reviewed articles, 14 studies examined the credibility of health information sources. As shown in Table 3, interpersonal sources were perceived as trustworthy by respondents in 9 articles. However, the credibility of online sources varied between articles. General internet searches were considered credible in 2 articles, while 1 article noted their partial reliability. Respondents in 2 articles expressed untrustworthy towards social media, websites, and online

video sites. However, respondents in 1 article expressed trust towards websites recommended by healthcare professionals (Hearn et al.,2014). Respondents in 2 articles expressed distrust of radio broadcasts, while magazines were viewed as unreliable in 1 article.

Table 4. Factors to Perinatal women's HISB

Factor types			No.of studies	References
Individual factor	Demographic	Parity	9	2,6,23,29,31,40,41,45,45
		Trimester	2	23,42
		Education	7	2,6,9,11,17,23,31
		Language	4	5,6,23,31
		Age	6	2,6,11,23,24,33
		Employed status	2	6,46
		Gestational weight	1	46
		Marital status	1	6
		Household income	1	6
		Country of birth	1	6
	Risk Perceptions		1	16
	Perceived information need		7	10,17,22,25,33,37,41
	Affective response	Stress	3	20,34,41
		Anxiety	2	20,42
		Ashamed	4	10,16,34,35
		Fear	4	10,16,24,39
	Health literacy	The ability to obtain health information	4	22,31,34,41
		The ability to use ICTs	3	31,34,41
		The ability to understand health information	3	16,20,28
		Health knowledge	3	23,28,44
	Self-efficacy		2	10,40
	Attitudes	Attitude toward HISB	5	24,32,33,34,41
		Attitude toward heath information	1	34
		Attitude toward media use	3	5,25,41
	Health status	Pregnancy complications	5	2,20,23,33,41
		Physical status	2	14,28
		Medical diagnosis	1	33
	Personal health responsibility	Protect the health of mother and fetus	2	21,28
	Media use	Frequency	1	23
Information-related factor	Information accessibility	Available information sources	7	11,20,28,34,39,41,42
		Available information devices	4	17,18,25,37
		Cost of information access	4	20,33,37,41
	Information credibility	Trustworthiness	1	42,
		Reliability	1	34
	Information usefulness	Relevance	3	17,20,39
		Applicability	2	17,42,
	Information overload	Too much information	3	33,34,41
	User-friendliness		2	34,41
	Anonymity		1	25
Social-cultural factor	Social support	Medical system support	17	1,5,10,14,16,18,20,23,28,31 ,33,34,35,39,41,42,44
		Transportation support	4	1,14,39,44
		Family support	7	10,14,16,20,24,34,39
	Social-cultural norm	Social stigma	2	35, 44
	social power dynamics	Decision-making power	3	16,39,44

3.5 Factors Influencing Perinatal Women's HISB

This review conducted a statistical analysis of factors associated with HISB in perinatal women based on selected articles. 31 studies examined the influencing factors associated with perinatal women's HISB. The results, shown in Table 4, revealed 19 antecedents that were classified into 3 categories: individual factors, information-related factors, and socio-cultural factors. Within the individual factors, 10 subcategories were observed, including demographics, risk perceptions, perceived information needs, affective responses, health literacy, self-efficacy, attitudes, health status, personal health responsibility, and media use. Among the information-related factors, 6 subcategories were identified, including information accessibility, information credibility, information usefulness, information overload, user-friendliness, and anonymity. The socio-cultural factors include 3 subcategories, namely: social support, socio-cultural norms, and social power dynamics.

Table 5. Barriers to Perinatal Women's HISB

Barrier types			No.of studies	References
Individual barriers	Low literacy	Low information literacy	4	16,20,33,41
		Low knowledge literacy	5	23,24,33,41,44
		Low language literacy	3	5,23,33
		Low digital literacy	2	2,31
	Cognitive barriers	Wrong ideas and beliefs	1	28
		Low perceived risk	1	16
		Low health awareness	1	24
	Negative attitudes	Attitude toward media use	3	2,33,41
		Attitude toward health information seeking	4	25,31,33,41
		Attitude toward health information	2	33,41
	Affective barriers	Feel stress and anxiety associated with information	4	20,33,41,42
		Feel scared to ask questions	4	10,24,33,41
		Feel embarrassed to discuss with others	4	10,16,24,35
	Health status	Physical weakness	1	20,28
		Pregnancy complications	1	20
		Physical disability	1	14
	Time constraints	Lack of time	5	20,24,25,28,31
Social-culture barriers	Social-cultural norms	Social stigma	2	35,39
		Prevented discussion of reproduction	1	44
	Social power dynamics	No decision-making power	3	16,39,44
	Lack of family support	Household and childcare duties	3	10,20,24
		Family pressure	2	10,24
		Limited support from family	4	14,16,33,41
Structural barriers	Geographical barriers	Long distances	4	1,16,24,39
		Transportation unavailability and poor road Infrastructure	5	1,14,24,33,41
		Cost of transportation	3	1,14,44
	Inadequate Support from the Health Care System	Long queues and waiting times	5	1,10,24,28,39
		Difficult to find healthcare professionals	3	24,28,31
		Inefficient communication with healthcare staff	4	10,20,31
		Lack of specific clinic/service	5	1,24,28,35,39
		Health providers lack skills	2	20,44
		Inadequate health devices	3	14,33,41
		Lack of privacy	3	16,25,44
		Negative attitude of health information providers	3	35,39,44
		High cost of health service	3	1,18,44
Information-related barriers	Unavailability of information	Lack of information device	6	2,5,17,20,24,25
		High cost of information access	6	2,17,20,33,37,41
		The limited source of information	3	33,39,41
	Poor information quality	Useless information	1	42
		Unreliable information	2	16,42
	Unsatisfactory experience	Information content hard to read	2	33,41
	Information overload	Too much information causes stress	2	33,41

3.6 Barriers to Perinatal Women's HISB

21 articles explored the barriers to perinatal women's HISB. The results, depicted in Table 5, identified 4 main categories of barriers: individual barriers, socio-cultural barriers, structural barriers, and information-related barriers. Within these categories, 15 subtypes and 42 specific issues were identified. Individual barriers encompass low literacy, cognitive barriers, negative attitudes, affective barriers, health status, and time constraints. Socio-cultural barriers include socio-cultural norms, social power dynamics, and lack of family support are the main barriers. Structural barriers include geographical barriers and inadequate support from the healthcare system. Barriers related to information carriers include unavailability of information, poor information quality, unsatisfactory experience, and information overload.

4. Discussion

This is the first systematic review that provides valuable insights into HISB of perinatal women by undertaking a comprehensive analysis of the existing literature using different research methods. The review focuses specifically on several key aspects: creating a research profile, summarizing the types of health information sought, identifying the sources utilized, assessing the perceived reliability of these sources, and examining the factors and barriers that influence perinatal women's HISB.

4.1 Principal Findings

The results demonstrate a significant increase in research on perinatal women's HISB over the last decade. The geographic distribution of studies displayed a dispersed pattern. Quantitative approaches were predominantly utilized, with a lower prevalence of mixed methods research. Questionnaires, interviews, and focus group discussions were the main data collection methods. Most samples comprised general pregnant women, although some studies specifically targeted low-income, rural, and disabled pregnant women, marginalized women received limited attention in the literature. In addition, the sample of respondents consisted predominantly of pregnant women during the pregnancy stage, with a smaller representation of postpartum women.

4.1.1 Prioritize Seeking Pregnancy-Related Health Information

The results indicate a disparity in perinatal women's search for health information, with a greater emphasis on pregnancy-related topics and less on postpartum-related information. Nutrition, fetal development, daily life issues, and mode and process of delivery were the types of health information most sought. These findings align with previous studies highlighting nutrition, labor/delivery, and fetal development, as prominent areas of interest for pregnant women seeking health information (Conrad, 2022; Ghiasi, 2021). This may be due to their high need for pregnancy-related information (Das & Sarkar, 2014), as they need to seek information during pregnancy to build a healthier body for their maternity responsibilities (Liu et al., 2019). Furthermore, during pregnancy, women are often bombarded with health information from multiple sources, including face-to-face interactions with healthcare professionals and online platforms that provide a wealth of health information. However, there is a dearth of available postpartum content despite the reported high demand for health information during the postpartum period (Guerra-Reyes et al., 2017). Hence, health information providers must realize the varying health information needs of perinatal women and provide targeted health information content that covers the entire perinatal period, including the pregnancy, childbirth, and postpartum stages, rather than limiting themselves to providing mainly pregnancy-related information.

4.1.2 Interpersonal Sources: Commonly Used and Reliable

Interpersonal sources, including healthcare professionals, family, and friends, were not only the primary sources of health information for perinatal women, but also the most trusted sources. Previous studies have demonstrated that these sources better understand the situation of perinatal women (Kaaya et al., 2021), provide tailored health information (Ruppel & Rains, 2012), and provide long-term reassurance (Prescott & MacKie, 2017). It makes them better equipped to handle individualized needs and inquiries compared to other sources. Additionally, Health care professionals have specialized medical expertise and the highest levels of trust (Ruppel & Rains, 2012). Family and friends are close to perinatal women (Owusu-Addo et al., 2016). Professionalism and proximity reinforce perinatal women's use of and trust in interpersonal sources of health information. Therefore, to communicate effectively with perinatal women, it is important to consider the dissemination of health information through interpersonal sources.

4.1.3 Online Sources: Commonly Used but Controversial in Terms of Reliability

Online sources are also one of the most commonly used by perinatal women. The internet allows perinatal women to access information at their convenience (Kennedy et al., 2017), and enable them quick access to a wide range of health-related information to support their information needs (Snyder et al.,2020). Accessibility and convenience (Rodger et al., 2013) contribute to the preference for online sources. However, there are inherent risks associated with online health information, primarily the presence of misinformation and misleading content (Waszak et al., 2018).

Online sources, including websites, forums, and social media, allow individuals to share health information based on their limited experience rather than factual evidence, without regard to the accuracy and credibility of the information provided (Prescott & MacKie,2017). As a result, the reliability of online health information is controversial and perinatal women have different perceptions of its trustworthiness. Therefore, when communicating with perinatal women, it is important to focus on improving the reliability of online health sources while utilizing online sources to disseminate health information.

4.1.4 Personal Health Responsibility: An Emerging Influential Factor

Among the factors influencing perinatal women's HISB, demographics, risk perception, perceived information needs, affective responses, health literacy, self-efficacy, attitudes, information credibility, information usefulness, information overload, social support, and sociocultural norms, have been identified in previous theoretical frameworks and subsequent empirical studies (Hwang & Jeong, 2023; Jahangiry et al., 2020; Jeong & Kim, 2016; Niu et al., 2020; Zhou & Roberto, 2022). Anonymity and user-friendliness as an item of information carrier characteristics have also been reported in previous studies (Ruppel & Rains, 2012).Notably, this study finds that personal responsibility for health was also a factor associated with HISB among perinatal women, which has not been proposed in previous studies. In contrast to subjective norms, which focus on external norms regarding information-seeking(Ajzen, 2020). Personal health responsibility emphasizes self-regulation, which refers to an individual's subjective sense of responsibility for their health (Javanmardi et al., 2022; Liu et al., 2019). However, personal responsibility for health as a factor influencing HISB has not been tested by researchers. Therefore, further empirical research is needed to investigate and validate the impact of this factor on HISB.

4.1.5 Social Power Dynamics: A Unique Barrier for Perinatal Women's HISB

The findings of this study indicate a difference from previous research on HISB among other populations. It reveals that social power dynamics are a barrier to perinatal women's HISB, a factor that is not commonly mentioned in the context of health information seeking in other populations. Adolescent pregnant women, especially those who are unmarried, rely heavily on their parents and partners to determine their sexual and reproductive health needs and guide their information seeking process (Ghiasi et al.,2020; Sychareun et al.,2018). The decision-making power of parents and husbands can hinder adolescent women's access to pregnancy-related health information. These findings highlight the unique challenges that perinatal women, and adolescent pregnancy in particular, face when seeking health information. Consequently, future research into barriers to perinatal women's HISB needs to recognize the impact of social power dynamics on their information-seeking behaviors, which will contribute to improve support and interventions tailored to their specific needs and circumstances.

4.2 Future Direction

4.2.1 Sociodemographic Characteristics and Perinatal Women's HISB

The findings highlight the significance of socio-demographic factors in influencing perinatal women's HISB. The existing literature has identified various socio-demographic factors including socioeconomic status, age group, educational level, employment status, marital status, place of residence, trimester, parity, and language. However, previous studies examining the influence of demographic factors on HISB have typically focused on analyzing the effect of a single factor, lacking comparative and interactive analyses. Future research could employ comparative and interaction effect analyses to examine the influence of two or more demographic factors on HISB. Furthermore, integrating demographic indicators as control or moderating variables with other factors affecting HISB could provide a comprehensive understanding of the impact of demographic factors on perinatal women's HISB. By integrating various socio-demographic factors with other influencing factors, researchers can gain a deeper understanding of how these factors shape information-seeking behaviors and tailor interventions and strategies to meet the diverse needs of perinatal women.

4.2.2 Focus on Perinatal Women in the Postpartum Period

The reviewed articles mainly focused on general pregnant women during the pregnancy stage as the sample characteristic. However, it is important to recognize that the postpartum period is a critical time for new mothers (Frederiksen et al., 2023). Previous research has indicated that new mothers have a high need for health information and a strong desire to receive health information about caring for their newborns during this period (Qian & Mao, 2021). Access to appropriate health information during the postpartum period can reduce maternal stress and promote infant health(Shaw et al., 2006). Despite the importance of postpartum health information seeking behavior, the existing research mainly emphasizes pregnant women's HISB, with only 3studies among the selected articles focusing on postpartum women. Therefore, future research should pay more attention to exploring postpartum women's HISB, including their information needs, sources of health information, factors influencing their search behaviors, motivations,

barriers to health information seeking, and intervention strategies and effective health information dissemination approaches.

4.2.3 Conducting Mixed Methods and Longitudinal Methodology Studies

The systematic review shows that previous studies have primarily relied on single quantitative and qualitative research methods with limited mixed methods research. Therefore, it is recommended that future studies adopt mixed methods to investigate this issue. Mixed research methods can be used to explore the complex factors that shape perinatal women's HISB. Qualitative techniques such as interviews and focus group discussions would enable an exploration of the unidentified factors influencing HISB by capturing nuanced contextual information. Survey methods could validate and quantify the relationships between factors identified from the qualitative analysis. This combination of qualitative and quantitative methods would provide researchers with a more holistic understanding of the research topic, enabling the unearthing of novel hypotheses and unexpected findings. Furthermore, existing quantitative studies of perinatal women's HISB predominantly adopt descriptive cross-sectional designs and lack longitudinal methods. Consequently, future studies can employ more longitudinal and exploratory research approaches, thereby facilitating a more holistic understanding of perinatal women's HISB.

4.2.4 Application of a Comprehensive Theoretical Framework

Theoretical frameworks offer a perspective for guiding the study and explaining how and why one would anticipate that the independent variable will predict or clarify the dependent variable (Creswell & Creswell, 2017). Nonetheless, only one research study reviewed employed a theoretical framework to direct its research design. Most of the other studies, regardless of their research methods, conducted descriptive analyses to investigate HISB among perinatal women. However, these investigations lacked a guiding theoretical framework and did not attempt to validate or extend existing HISB theories. Therefore, it is recommended that future researchers embrace established theoretical frameworks, such as the theory of planned behavior (Ajzen, 2020), the comprehensive model of information seeking (Johnson, 1995), or the planned risk information seeking model (Kahlor, 2010), which have been widely employed in the study of HISB. Employing these frameworks enables researchers to establish a rigorous theoretical structure and methodical approach to comprehending HISB amid perinatal women. Furthermore, the researchers can augment the existing literature by creating links with previous research.

5. Limitations

This systematic review has several limitations. Firstly, the sources used for the search were not exhaustive due to the interdisciplinary nature of studies on HISB in perinatal women. Despite our efforts to refine the search strategy using multiple databases, relevant keywords, and citation chaining, some relevant literature may have been missed. Secondly, there is a limitation regarding the definition of health information seeking. In this study, we defined it as an individual's active and intentional information behaviors (Lambert & Loiselle, 2007). However, different researchers may interpret this definition differently, which may lead to the omission of articles that do not agree with our specific definition. Finally, this study includes articles that use different research methods to investigate this topic. We have not only summarized variables from quantitative studies directly related to HISB, but also incorporated any statements or findings from quantitative articles related to HISB. Therefore, further empirical validation is needed to confirm the accuracy and generalizability of these descriptive factors derived from qualitative articles.

6. Conclusion

This review provides a comprehensive overview of research on HISB among perinatal women. It summarized the types of health information sought by perinatal women, the sources they use, their evaluation of information sources, and the facilitators/barriers to HISB. The findings reveal that perinatal women primarily seek pregnancy-related information, commonly resort to interpersonal and online sources, and trust interpersonal sources. Factors and barriers influencing their HISB are mainly related to individual, socio-cultural, and information carriers, including a factor of personal health responsibility that has not been emphasized by researchers so far. Despite the increasing number of studies on this topic, there are still gaps in the understanding of perinatal women's HISB. Based on the findings of this review, the authors recommend several directions for future research.

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The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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Appexi A: All articles for review.

No	Author(s)&Year	Title
1	Aboagye & Agyemang (2013)	Maternal health-seeking behavior: the role of financing and organization of health services in Ghana.
2	Ahmadian et al., (2020)	Use of the Internet by pregnant women to seek information about pregnancy and childbirth.
3	Al-Dahshan et al., (2021)	Pattern of internet use for pregnancy-related information and its predictors among women visiting primary healthcare in Qatar: a cross-sectional study.
4	Almoajel & Almarqabi (2016)	Online health-information seeking behavior among pregnant women in prenatal clinics at King Saud Medical City, Riyadh.
5	Arcia et al., (2019)	Information needs and information-seeking processes of low-income pregnant women in relation to digital maternity education resources.
6	Buchanan et al., (2021)	Sources of information and the use of mobile applications for health and parenting information during pregnancy: Implications for health promotion.
7	Camacho-Morell & Esparcia (2020)	Influence and use of information sources about childbearing among Spanish pregnant women.
8	Coglianese et al., (2020)	Effect of online health information seeking on anxiety in hospitalized pregnant women: Cohort study.
9	Dalhaug & Haakstad (2019)	What the health? Information sources and maternal lifestyle behaviors.
10	Das & Sarkar (2014)	Pregnancy-related health information-seeking behaviors among rural pregnant women in India: validating the Wilson model in the Indian context.
11	De Santis et al., (2010)	Use of the Internet by women seeking information about potentially teratogenic agents.
12	Dol et al., (2022)	Health information seeking in the postpartum period: A cross-sectional survey.
13	Gabutti et al., (2020)	Use of Information Sources on Vaccine-Preventable Diseases in Pregnant Women: An Experience in Ferrara, Italy.
14	Ganle et al., (2016)	Challenges women with disability face in accessing and using maternal healthcare services in Ghana: a qualitative study.
15	Gao et al., (2013)	Internet use by Chinese women seeking pregnancy-related information.
16	Ghiasi et al., (2020)	Perceived barriers to accessing pregnancy-related health information among married adolescent women: a qualitative study in Iran.
17	Guerra-Reyes et al., (2016)	Postpartum Health Information Seeking Using Mobile Phones: Experiences of Low-Income Mothers.
18	Hearn et al., (2014)	Reaching perinatal women online: the Healthy You, Healthy Baby website and app.
19	Huberty et al., (2013)	Describing the use of the internet for health, physical activity, and nutrition information in pregnant women.
20	Javanmardi et al., (2019)	Challenges to access health information during pregnancy in Iran: a qualitative study from the perspective of pregnant women, midwives and obstetricians.
21	Javanmardi et al., (2022)	Exploring the motivations of pregnant women to seek health information: A qualitative study.
22	Kaaya et al., (2021)	Maternal knowledge-seeking behavior among pregnant women in Tanzania.
23	Kamali et al., (2018)	Health information needs of pregnant women: information sources, motives and barriers.
24	Kang et al., (2022)	Pregnancy-Related Health Information-Seeking Behavior of Rural Women of

		Selected Villages of North India.
25	Kennedy et al., (2017)	Preferences of women for web-based nutritional information in pregnancy.
26	Larsson (2009)	A descriptive study of the use of the Internet by women seeking pregnancy-related information.
27	Lee, J. Y., & Lee, E. (2022)	What topics are women interested in during pregnancy: exploring the role of social media as informational and emotional support.
28	Liu et al., (2019)	Dental care-seeking and information acquisition during pregnancy: A qualitative study.
29	Lobo et al., (2020)	Nutrition information in pregnancy: Where do women seek advice and has this changed over time?
30	Mackintosh et al., (2020)	Online resources and apps to aid self-diagnosis and help seeking in the perinatal period: A descriptive survey of women's experiences.
31	Narasimhulu et al., (2016)	Patterns of Internet Use by Pregnant Women, and Reliability of Pregnancy-Related Searches.
32	Newby et al., (2015)	Internet use by first-time mothers for infant feeding support.
33	Noncungu & Chipps (2020)	Information-seeking in first visit pregnant women in Khayelitsha, South Africa.
34	Ojaperv & Virkus (2023)	Pregnancy-related health information behaviour of Estonian women.
35	Owusu-Addo et al., (2016)	Health information-seeking behaviours among pregnant teenagers in Ejisu-Juaben Municipality, Ghana.
36	Prescott & MacKie (2017)	You sort of go down a rabbit hole...you're just going to keep on searching: A qualitative study of searching online for pregnancy-related information during pregnancy.
37	Rodger et al., (2013)	Pregnant women's use of information and communications technologies to access pregnancy-related health information in South Australia.
38	Serçekuş et al., (2021)	Internet use by pregnant women seeking childbirth information.
39	Shatilwe et al., (2022)	Pregnant adolescents and nurses perspectives on accessibility and utilization of maternal and child health information in Ohangwena Region, Namibia.
40	Shieh, Broome & Stump (2010)	Factors associated with health information-seeking in low-income pregnant women.
41	Shieh et al., (2009)	Information–seeking and its predictors in low-income pregnant women.
42	Snyder et al., (2020)	A mixed-methods investigation of women's experiences seeking pregnancy-related online nutrition information.
43	Song et al., (2013)	Information needs, seeking behaviors, and support among low-income expectant women.
44	Sychareun et al., (2018)	Determinants of adolescent pregnancy and access to reproductive and sexual health services for married and unmarried adolescents in rural Lao PDR: a qualitative study.
45	Vogels-Broeke et al., (2022)	Sources of information used by women during pregnancy and the perceived quality.
46	Willcox et al., (2015)	Gestational weight gain information: seeking and sources among pregnant women.
47	Zhu et al., (2019)	Pregnancy-related information seeking and sharing in the social media era among expectant mothers in China: Qualitative study.