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Preterm birth among Pacific Islander women and related perinatal outcomes: a scoping review protocol

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Title Page

Preterm birth among Pacific Islander women and related perinatal outcomes: a scoping review protocol

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ABSTRACT

Introduction: Infants born alive <37 weeks are classified as premature. The global estimate of preterm birth in 2014 was 10.6%, and it is the leading cause of death of children under the age of 5 years. Preterm birth disproportionately affects women of minority populations, yet knowledge about the incidence and associated outcomes among Pacific Islanders is limited. The objective of this scoping review is to identify studies that describe risk factors, maternal-child health outcomes, existing interventions to prevent preterm birth among Pacific Islanders, and summarize the barriers and facilitators to decrease the burden.

Methods and Analysis: We will follow the Joanna Briggs Institute Manual for Evidence Synthesis for scoping reviews and the Preferred Reporting Items for Scoping Reviews (PRISMA-ScR) to conduct this scoping review. The Covidence web application will be used for data management and consensus review. We will search on MEDLINE ALL (Ovid), EMBASE (Ovid), Web of Science Core Collection (as licensed at Yale), the Cochrane Library, CINAHL (EBSCOhost), and two non-indexed regional journals (Pacific Journal of Reproductive Health and Pacific Health Dialog). Title-abstract and full-text screening of eligible studies will be performed by two authors, and data will be extracted by the first author. Outcomes extracted will be presented using evidence mapping.

Ethics and Dissemination: Findings will drive suggestions for new data collection needed to fill knowledge gaps and improve future study designs to decrease the burden of preterm birth among Pacific Islanders. There are no ethical concerns. This protocol will be disseminated in related peer-reviewed journals.

Strength and limitations of this study

- To our knowledge, this will be the first scoping review to describe risk factors, perinatal outcomes, and interventions related to preterm birth among Pacific Islanders.
- Findings from this review will guide future data collection to address gaps in existing literature to decrease the burden of preterm birth in this population.
- Quality assessment of the included studies will not be a primary emphasis of this review. Our future work will include a systematic review with meta-analyses based on our findings.

BACKGROUND

According to the World Health Organization (WHO), preterm birth is defined as babies born alive before 37 weeks of pregnancy are completed[1]. Preterm birth is the leading cause of death globally in children under the age of 5 years[1], and is considered the most common cause of neonatal mortality (death in the first 28 days of life)[2, 3]. Common risk factors for preterm birth include maternal demographic characteristics, pregnancy history, nutritional status (both pre-pregnancy and inter-pregnancy), present pregnancy characteristics, psychological characteristics, smoking, infection, uterine contractions, and cervical length[4-6]. In the short term, compared with infants born full term (delivery between 37 week 0 days and 41 weeks 6 days[7, 8]), preterm infants are at increased risk of neonatal respiratory conditions, necrotizing enterocolitis, sepsis, neuromotor abnormalities, and visual or hearing impairment[5, 9, 10]. Longer term consequences include cognitive impairments, impaired learning ability, and challenges with executive function[9]. Mothers who experience preterm birth have been shown to experience greater psychological distress compared with mothers who gave birth at full term[11]. Furthermore, mothers who give birth before 37 weeks are at increased risk of having preterm infants in consequent pregnancies[4]. Interventions to reduce morbidity and mortality associated with preterm birth can

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be classified as primary (implemented to all women before or during pregnancy), secondary (identifying women with known risk factors and reducing the risk), or tertiary (improving perinatal outcomes of preterm infants)[12]. Even with an increase in evidence-based interventions the preterm birth rate globally has not declined, although survival among preterm infants has increased[12].

The global prevalence estimate for preterm birth in 2014 was 10.6% (uncertainty interval 9.0%-12.0%)[13], and there are both between-country and within-country inequities[4, 12, 13]. In the US, for example, racial and ethnic differences in preterm birth rates were observed in a 2018 report from the Centers for Disease Control and Prevention (CDC); the preterm birth rate among non-Hispanic black women (13.6%) was almost 1.5 times the rate among non-Hispanic white women (9.5%) in 2016[14]. Little is currently known, however, about preterm birth among Pacific Islanders, who are the third fastest growing minority group in the US—based on the 2010 US Census, 1.2 million people identified as native Hawaiian and other Pacific Islander[15]. In the broader Pacific Ocean region, there are approximately 2.5 million people resident on over 12,000 islands[16]. Despite their population size, Pacific Islanders in the US and the Pacific region in general have been historically underrepresented in health research, likely related to limited health care access and a distrust of health professionals[17-20].

The United States (US), New Zealand, and Australia are countries with the largest Pacific Islander migrant populations in the world. In 2014, the preterm birth rate in the US was 9.6% and the number of preterm births in the US placed it among the ten countries with the highest prevalence at that time[13], while the rate in New Zealand was 7.5% (uncertainty interval 7.0%-9.8%), and in Australia 8.6% (uncertainty interval 6.9%-9.5%). Racial differences in preterm birth were observed in New Zealand and Australia: in New Zealand, Maori women had the highest rates of preterm birth compared with other Pacific women or European New Zealanders during the period 1980-2001[21]. Similarly in Australia between 1984-2006, the prevalence of preterm birth among Aboriginal infants (14.8%) was almost 2 times the prevalence among non-Aboriginal infants (7.6%)[22]. In the US and other countries or regions in the Pacific, our understanding of preterm birth is still limited.

Pacific Islanders have a unique health profile that may put them at risk for preterm or extremely preterm birth: they have a disproportionately high prevalence of obesity and related non-communicable diseases compared to other populations[16]. Obesity is a significant risk factor for pre-eclampsia and pre-pregnancy diabetes[23, 24], which have been associated with indicated preterm births[4]. In 13 Pacific Island nations described in the WHO STEPwise approach to surveillance (STEPS), over half of the population was overweight, and, notably, women had a greater burden of overweight and obesity compared with men[16]. Similarly high rates of obesity exists in the US, where 38.7% of Pacific Islanders were obese, which was almost 9% higher than their white counter parts (30.1%)[25]. According to the New Zealand Health Survey 2018/19, the prevalence of obesity among New Zealanders aged over 15 years was 30.9%; in adults, Maori were 1.8 times as likely to have obesity compared with non-Maori, and Pacific Islanders were 2.5 times as likely compared with non-Pacific adults[26]. Likewise in Australia, obesity was the second highest contributor to disease in indigenous people[27].

To better understand preterm birth and relevant perinatal outcomes among Pacific Islanders, the aim of this

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scoping review is to examine published original studies and reports about preterm birth among Pacific Islanders in the US, the US Affiliated Pacific Islands (USAPIs), and three Pacific zones (Micronesia, Melanesia, and Polynesia).

OBJECTIVES

The objective of this scoping review is to identify and summarize existing articles on preterm birth among Pacific Islander women. We will collect all published original studies that discuss preterm birth in the US, the US Affiliated Pacific Islands (USAPIs) and the wider Pacific region, including Micronesia, Melanesia, and Polynesia. Because of the large Pacific diaspora present in Australia and New Zealand, we will also include studies from these settings. Specifically, we aim:

1. To summarize the data or reports about the prevalence of preterm birth among Pacific Islander women;
2. To identify risk factors for preterm birth among Pacific Islander women;
3. To understand short-term health consequences (diagnoses during the initial birth hospitalization) and long-term health outcomes (symptoms or diagnoses after the initial birth hospitalization) of preterm birth in infants born less than 37 gestational weeks;
4. To describe maternal health outcomes among Pacific Islander women who experienced preterm birth;
5. To explore whether there are interventions known to improve perinatal outcomes among Pacific Islander women and their preterm infants;
6. To summarize knowledge gaps in the existing literature.

METHODS

The scoping review protocol will follow the Joanna Briggs Institute Manual for Evidence Synthesis for scoping reviews[28] and the Preferred Reporting Items for Scoping Reviews (PRISMA-ScR)[29]. The search strategy of this project has been posted on the Open Science Framework (OSF)[30].

Eligibility Criteria

Studies will be included if they fulfill the following criteria:

Study population

Studies will be limited to Pacific Islanders living in the US, the USAPIs, other countries or regions in three geographical zones in the Pacific, Micronesia, Melanesia, and Polynesia. The list of included countries or regions follows the World Health Organization definition of Pacific Island Countries[31] and previous studies[16, 19], which includes: American Samoa, Guam, Hawaii, the Commonwealth of the Northern Mariana Islands (CNMI), the Federated States of Micronesia (FSM), the Republic of the Marshall Islands (RMI), Palau, Kiribati, Nauru, Papua New Guinea, the Solomon Islands, Fiji, New Caledonia, Vanuatu, Tonga, Tuvalu, Tokelau, Niue, French Polynesia, New Zealand, Samoa and the Cook Islands. Moreover, since Australia has a large proportion of Pacific Islander residents (206,673 people, 0.9% in 2016)[32], studies from Australia will also be selected if they report outcomes among Pacific Islanders, including those from Ni-Vanuatu, Tahiti, and the Pitcairn islands. In New Zealand (NZ) and Hawaii, studies including Māori (the indigenous Polynesian people of New Zealand), the indigenous people of New Zealand, and Native Hawaiians of Hawaii will be selected.

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Outcomes of interest

The main outcome of interest for this review will be preterm birth among Pacific Islanders. Prevalence of and risk factors associated with preterm birth in those studies will be summarized. Relevant health outcomes of preterm infants will be classified as "short-term" (diagnoses during the initial birth hospitalization) or "long-term" (symptoms or diagnoses after the initial birth hospitalization) outcomes[33, 34]. Health outcomes of mothers who experienced preterm birth will also be examined. Potential neonatal outcomes will include, but will not be limited to, birth weight, fetal growth restriction, fetal death, stillbirths, neonatal intensive care unit (NICU) admission, neonatal, and infant mortality. Maternal health outcomes included in our study will be, but will not be limited to, maternal mood effects, and physical health outcomes if there is any report. Existing interventions that have been implemented on preterm Pacific Islander infants will also be reviewed. Studies retrospectively examining changes in healthcare management or practices will not be included in this review; studies describing outcomes of multiple births will also be excluded.

Publication date

The search was completed on November 5, 2020, so we will include studies published prior to this date. No publication date limits were imposed in the databases; that is, each database was searched from inception.

Publication Type

Original studies published in peer-reviewed journals and government reports will be included in this review. Dissertations will be eligible for inclusion. Conference abstracts and master's theses will not be included in the review since the final study outcomes may not be available/reported, but these will be examined for the purpose of citation chaining. Case reports will also be excluded.

Language

Studies published in English will be included. If a study is written in a language other than English but the title and abstracts are in English, we will include the paper in the title abstract screening stage and attempt to obtain a translation of the full text should it be determined to be relevant to our outcomes of interest.

Search strategy

Literature search strategies will be developed using two concepts: (1) Pacific Islanders and (2) preterm birth outcomes. Appropriate controlled vocabulary terms and keyword search terms will be used. To the extent allowed by bibliographic database indexing, articles about NZ but only discussing NZ Europeans and articles about Australia but only including aboriginal Australians or European-Australians will not be retrieved.

The search strategy will be developed by author, BW, in consultation with all co-authors, including a medical librarian. The search histories for all databases will be archived on an OSF project[30] in a reproducible format. Our search strategy on MEDLINE ALL (Ovid) is listed in Table 1.

Table 1 Search strategy on MEDLINE ALL (Ovid)

#	Search Terms	Results

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1	exp premature birth/ or exp infant, premature/ or exp obstetric labor, premature/ or exp infant, low birth weight/ or exp tocolytic agents/ or exp fetal membranes, premature rupture/ or exp infant, premature, diseases/ or exp retinopathy of prematurity/ or exp respiratory distress syndrome, newborn/ or exp kangaroo-mother care method/ or exp enterocolitis, necrotizing/ or exp bronchopulmonary dysplasia/ or (delivery, obstetric/ and pregnancy outcome/)	196985
2	(((preterm or pre-term) adj2 (deliver* or birth* or labo* or syndrome* or infant* or neonate* or pregnan* or newborn* or born* or rupture* or retinopath* or retin* or bronch* or pulmon* or health*)) or prematur* or pre-matur* or ((short* or small*) adj1 gestation*) or PPROM).mp.	236244
3	1 or 2	327774
4	oceania/ or Australasia/ or exp pacific islands/ or exp oceanic ancestry group/	70217
5	((pacific adj2 (island* or wom#n or mother* or population* or infant* or newborn* or ancestr* or born* or neonate* or pregnan*)) or pasifika or pacifica or Melanesia* or Micronesia* or Polynesia* or Hawai* or "Hawai'i" or "ni'ihau" or niihau* or "kaua'I" or Kauai* or "o'ahu" or oahu* or "moloka'i" or Molokai* or "lana'i" or lanai* or "kaho'olawe" or Kahoolawe* or maui* or austral island* or "tupua'I island" or bass island* or Australasia* or Australia*-pacific or south sea island* or caroline island* or carolin* or Carolinian* or Chamorro* or chuuk* or cook island* or easter island* or fiji* or futun* or guam* or "i-kiribati" or Kiribati* or kosrae* or maori* or mariana island* or mariana* or marshall island* or marshall* or new Caledonia* or niue* or ni-vanuatu or Tuvalu* or Tahiti* or palau* or Nauru* or papua new guinea* or Papua* or Solomon island* or tonga* or Tokelau* or pitcairn* or pitcairn island* or pohnpei* or phoenix island* or rawaki island* or rapa nui* or saipan* or American samoa* or samoa* or New Zealand*).mp.	152302
6	4 or 5	159981
7	3 and 6	2251
8	exp animals/ not humans/	4752796
9	7 not 8	2017
Search date: Nov 5 2020		

Information sources

We will search the following five databases: MEDLINE ALL (Ovid), EMBASE (Ovid), Web of Science Core Collection (as licensed at Yale, listed in Table 2), the Cochrane Library, and CINAHL (EBSCOhost). Articles published in the Pacific Journal of Reproductive Health and Pacific Health Dialog, two regional journals, will be searched independently, since studies published in these two journals may be highly relevant, yet neither journal is well indexed in major bibliographic databases.

Table 2 Web of science core collection licensed at Yale

Web of Science Core Collection: Citation Indexes (Yale's version)

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Science Citation Index Expanded (SCI-EXPANDED) --1900-present
Social Sciences Citation Index (SSCI) --1900-present
Arts & Humanities Citation Index (A&HCI) --1975-present
Conference Proceedings Citation Index- Science (CPCI-S) --1991-present
Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH) --1991-present
Book Citation Index– Science (BKCI-S) --2005-present
Book Citation Index– Social Sciences & Humanities (BKCI-SSH) --2005-present
Emerging Sources Citation Index (ESCI) --2015-present
Web of Science Core Collection: Chemical Indexes (Yale's version)
Current Chemical Reactions (CCR-EXPANDED) --1985-present (Includes Institut National de la Propriete Industrielle structure data back to 1840)
Index Chemicus (IC) --1993-present

We will also conduct citation chaining (backwards and forwards) on papers that meet inclusion criteria and relevant reviews to identify additional studies that may have been missed in the initial search. Recent papers that cited included studies will also be reviewed, based on the citation graph in Web of Science Core Collection.

Reports from international, national, state and territorial government agencies will also be searched manually, including, but not limited to, World Health Organization (WHO), the Centers for Disease Control, Pacific Island Health Officers Association, New Zealand Ministry of Health, Counties Manukau Health, and Australian Government Department of Health.

Data management

Search results will be downloaded from databases and imported to Covidence (an evidence synthesis web application) for deduplication, title-abstract screening, and full text screening[35, 36]. Other relevant studies identified through hand-searching and citation chaining will also be added to the Covidence screening project. The study selection process will be reported in the PRISMA flowchart.

Selection of sources and evidence

We will pilot the inclusion and exclusion criteria before the main phase of title-abstract screening process. For the pilot, at least two authors will review 50 records, making title-abstract screening decisions (yes/no/maybe) and creating tags to be used in Covidence. Any disagreements will be discussed with the senior author to reach consensus on the interpretation of the inclusion and exclusion criteria. The piloted 50 records will be uploaded directly to the irrelevant or Full Text Screening category of the Covidence project.

Each article will be screened with two steps: (1) title and abstract screening; (2) full text screening. Within each step, publications will be reviewed by two reviewers independently. Disagreements during the screening process on inclusion status will be discussed by the first and senior authors and consensus reached on their inclusion. The reason for exclusion will be recorded during the full-text screening stage. Screening questions is expressed in Table 3. We may record additional exclusion criteria as the review process proceeds.

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Table 3 Screening questions

1. Was the article or title-abstract published in the English language?
2. Does the article discuss preterm birth outcomes?
3. Is the Pacific Islander race group discussed in the article?
4. Does the article disaggregate preterm birth outcomes for Pacific Islanders rather than aggregating with other ethnic groups? (Exclude if aggregated)
5. Is the article a conference abstract or a master thesis? (Exclude if yes)
6. Is the article a case report? (Exclude if yes)
7. Is the article focused on outcomes after multiple birth? (Exclude if yes)

Data extraction process

Articles that meet the eligibility criteria and pass the screening questions will be moved to the data extraction phase. The first author, BW, will extract relevant information from the articles and compare their extractions. A customized data-extraction sheet designed by the authors will be used to collect data and information that consist with the objectives of the scoping review (see Table 4). We will pilot this extraction sheet on several studies to confirm all relevant information is being collected by this method. Categories will be revised during the pilot extraction process if modifications are necessary. Extraction fields may change depending on the final included studies.

Table 4 Data extraction categories

Publication details
Citation (year of publication and first author)
Study type (original study/agency report/dissertation)
Funding source
Study characteristics
Study design/type
Objective(s) of study
Study location/setting (country of origin and data source)
Participant characteristics
Maternal age/ age-range
Pacific Islander sub-groups
Number of participants
Socioeconomic status of participants
Prevalence Estimates of Preterm Birth Reported
Risk Factors Reported
Relevant Short-term Infant Health Outcomes (diagnoses during the initial birth hospitalization)
Relevant Long-term Infant Health Outcomes (symptoms or diagnoses after the initial birth hospitalization)
Relevant Maternal Health Outcomes
Implemented Interventions and Outcomes

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Patient and Public Involvement

Our study does not involve patients or the public in the design, conduct, reporting, or dissemination plans.

PRESENTATION OF FINDINGS

The information extracted from the selected articles will be presented by evidence mapping to express the breadth of research on preterm birth among Pacific Islanders. The data will be displayed according to year of publication, country of origin, study design, number of participants, Pacific Islander subgroups, prevalence estimates reported, risk factors reported, relevant infant and maternal postpartum outcomes reported, and existing interventions reported. Data and figures will be summarized to express the outcomes. We will provide a narrative summary of the selected studies and discuss how our findings in this review relate to our objectives. If sufficient data is determined to be available to address one or more of our study objectives quantitatively, we will conduct meta-analyses in the future to summarize the findings.

DISCUSSION

The purpose of this scoping review is to understand knowledge gaps about preterm birth and relevant perinatal outcomes among Pacific Islander women and their infants. Our intention is that our review will guide future data collection to address gaps in the existing literature, identify risk factors associated with preterm birth among Pacific Islanders, and assess the evidence for existing interventions to address poor perinatal outcomes associated with preterm birth in this group.

ETHICS AND DISSEMINATION

There are no apparent ethical issues. This study will be published in a peer-reviewed journal.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable since no datasets were generated and/or analyzed for this scoping review protocol.

Contributors

BW and NLH conceived the study, with the support of ST, VS, KN, and BM. BW, NLH and KN developed the search strategy. BW, KA and NLH wrote the initial draft of the manuscript, with the review of ST, VS, KN, and BM. BW, KA, and NLH will finish the study screening.

Competing Interests

None declared.

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Preterm birth among Pacific Islander women and related perinatal outcomes: a scoping review protocol

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Title Page

Preterm birth among Pacific Islander women and related perinatal outcomes: a scoping review protocol

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ABSTRACT

Introduction: Infants born alive <37 weeks are classified as premature. The global estimate of preterm birth in 2014 was 10.6%, and it is the leading cause of death of children under the age of 5 years. Preterm birth disproportionately affects women of minority populations, yet knowledge about the incidence and associated outcomes among Pacific Islanders is limited. The objective of this scoping review is to identify studies that describe risk factors, maternal-child health outcomes, existing interventions to prevent preterm birth among Pacific Islanders, and summarize the barriers and facilitators to decrease the burden.

Methods and Analysis: We will follow the Joanna Briggs Institute Manual for Evidence Synthesis for scoping reviews and the Preferred Reporting Items for Scoping Reviews (PRISMA-ScR) to conduct this scoping review. The Covidence web application will be used for data management and consensus review. We will search on MEDLINE ALL (Ovid), EMBASE (Ovid), Web of Science Core Collection (as licensed at Yale), the Cochrane Library, CINAHL (EBSCOhost), and two non-indexed regional journals (Pacific Journal of Reproductive Health and Pacific Health Dialog). Title-abstract and full-text screening of eligible studies will be performed by two authors, and data will be extracted by the first author. Outcomes extracted will be presented using evidence

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mapping.
Ethics and Dissemination: Findings will drive suggestions for new data collection needed to fill knowledge gaps and improve future study designs to decrease the burden of preterm birth among Pacific Islanders. There are no ethical concerns. This protocol will be disseminated in related peer-reviewed journals.

Keywords: PERINATOLOGY, PAEDIATRICS, Maternal medicine < OBSTETRICS, PUBLIC HEALTH

Strength and limitations of this study

- To our knowledge, this will be the first scoping review to describe risk factors, perinatal outcomes, and interventions related to preterm birth among Pacific Islanders.
- Findings from this review will guide future data collection to address gaps in existing literature to decrease the burden of preterm birth in this population.
- Quality assessment of the included studies will not be a primary emphasis of this review. Our future work will include a systematic review with meta-analyses based on our findings.

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BACKGROUND

According to the World Health Organization (WHO), preterm birth is defined as babies born alive before 37 weeks of pregnancy are completed[1]. Preterm birth is the leading cause of death globally in children under the age of 5 years[1], and is considered the most common cause of neonatal mortality (death in the first 28 days of life)[2, 3]. Common risk factors for preterm birth include maternal demographic characteristics, pregnancy history, nutritional status (both pre-pregnancy and inter-pregnancy), present pregnancy characteristics (e.g., infectious conditions, hypertensive disorders, and periodontal diseases), psychological characteristics (e.g., stress and depression), smoking, infection, uterine contractions, and cervical length[4-6]. In the short term, compared with infants born full term (delivery between 37 week 0 days and 41 weeks 6 days[7, 8]), preterm infants are at increased risk of neonatal respiratory conditions, necrotizing enterocolitis, sepsis, neuromotor abnormalities, and visual or hearing impairment[5, 9, 10]. Longer term consequences include issues related to neuromaturation (cognitive impairments, impaired learning ability, and challenges with executive function[9]), and increased risk of lifelong morbidity, including hypertension, cardiometabolic disease, lung disfunction etc.[11]. Mothers who experience preterm birth have been shown to experience greater psychological distress compared with mothers who gave birth at full term[12]. Furthermore, mothers who give birth before 37 weeks are at increased risk of having preterm infants in consequent pregnancies[4]. Interventions to reduce morbidity and mortality associated with preterm birth can be classified as primary (implemented to all women before or during pregnancy), secondary (identifying women with known risk factors and reducing the risk), or tertiary (improving perinatal outcomes of preterm infants)[13]. Even with an increase in evidence-based interventions the preterm birth rate globally has not declined, although survival among preterm infants has increased[13].

The global prevalence estimate for preterm birth in 2014 was 10.6% (uncertainty interval 9.0%-12.0%)[14], and there are both between-country and within-country inequities[4, 12, 13]. In the US, for example, racial and ethnic differences in preterm birth rates were observed in a 2018 report from the Centers for Disease Control and Prevention (CDC); the preterm birth rate among non-Hispanic black women (13.6%) was almost 1.5 times the rate among non-Hispanic white women (9.5%) in 2016[15]. Little is currently known, however, about preterm birth among Pacific Islanders, who are the third fastest growing minority group in the US—based on the 2010 US Census, 1.2 million people identified as native Hawaiian and other Pacific Islander[16]. In the broader Pacific Ocean region, there are approximately 2.5 million people resident on over 12,000 islands[17]. Despite their population size, Pacific Islanders in the US and the Pacific region in general have been historically underrepresented in health research, likely related to limited health care access and a distrust of health professionals[18-21].

The United States (US), New Zealand, and Australia are countries with the largest Pacific Islander migrant populations in the world. In 2014, the preterm birth rate in the US was 9.6% (uncertainty interval not reported) and the number of preterm births in the US placed it among the ten countries with the highest prevalence at that time[14], while the rate in New Zealand was 7.5% (uncertainty interval 7.0%-9.8%), and in Australia 8.6% (uncertainty interval 6.9%-9.5%). Racial differences in preterm birth were observed in New Zealand and Australia: in New Zealand, Maori women had the highest rates of preterm birth compared with other Pacific women or European New Zealanders during the period 1980-2001[22]. Similarly in Australia between 1984-2006, the prevalence of preterm birth among Aboriginal infants (14.8%) was almost 2 times the prevalence

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among non-Aboriginal infants (7.6%)[23]. In the US and other countries or regions in the Pacific, our understanding of preterm birth is still limited.

Pacific Islanders have a unique health profile that may put them at risk for preterm or extremely preterm birth: they have a disproportionately high prevalence of obesity and related non-communicable diseases compared to other populations[17]. Obesity is a significant risk factor for pre-eclampsia and pre-pregnancy diabetes[24, 25], which have been associated with indicated preterm births[4]. In 13 Pacific Island nations described in the WHO STEPwise approach to surveillance (STEPS), over half of the population was overweight, and, notably, women had a greater burden of overweight and obesity compared with men[17]. Similarly high rates of obesity exists in the US, where 38.7% of Pacific Islanders were obese, which was almost 9% higher than their white counter parts (30.1%)[26]. According to the New Zealand Health Survey 2018/19, the prevalence of obesity among New Zealanders aged over 15 years was 30.9%; in adults, Maori were 1.8 times as likely to have obesity compared with non-Maori, and Pacific Islanders were 2.5 times as likely compared with non-Pacific adults[27]. Likewise in Australia, obesity was the second highest contributor to disease in indigenous people[28].

To better understand preterm birth and relevant perinatal outcomes among Pacific Islanders, the aim of this scoping review is to examine published original studies and reports about preterm birth among Pacific Islanders in the US, the US Affiliated Pacific Islands (USAPIs), and three Pacific zones (Micronesia, Melanesia, and Polynesia).

OBJECTIVES

The objective of this scoping review is to identify and summarize existing articles on preterm birth among Pacific Islander women. We will collect all published original studies that discuss preterm birth in the US, the US Affiliated Pacific Islands (USAPIs) and the wider Pacific region, including Micronesia, Melanesia, and Polynesia. Because of the large Pacific diaspora present in Australia and New Zealand, we will also include studies from these settings. Specifically, we aim:

1. To summarize the data or reports about the prevalence of preterm birth among Pacific Islander women;
2. To identify risk factors for preterm birth among Pacific Islander women;
3. To understand short-term health consequences (diagnoses during the initial birth hospitalization) and long-term health outcomes (symptoms or diagnoses after the initial birth hospitalization) of preterm birth in infants born less than 37 gestational weeks;
4. To describe maternal health outcomes among Pacific Islander women who experienced preterm birth;
5. To explore whether there are interventions known to improve perinatal outcomes among Pacific Islander women and their preterm infants;
6. To identify whether the results of the above 5 objectives are different among Pacific Islanders in the US, the USAPIs, or the wider Pacific region.
7. To summarize knowledge gaps in the existing literature.

METHODS

The scoping review protocol will follow the Joanna Briggs Institute Manual for Evidence Synthesis for scoping reviews[29] and the Preferred Reporting Items for Scoping Reviews (PRISMA-ScR)[30]. The search strategy of

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this project has been posted on the Open Science Framework (OSF)[31].

Eligibility Criteria

Studies will be included if they fulfill the following criteria:

Study population

Studies will be limited to Pacific Islanders living in the US, the USAPIs, other countries or regions in three geographical zones in the Pacific, Micronesia, Melanesia, and Polynesia. The list of included countries or regions follows the World Health Organization definition of Pacific Island Countries[32] and previous studies[17, 20], which includes: American Samoa, Guam, Hawaii, the Commonwealth of the Northern Mariana Islands (CNMI), the Federated States of Micronesia (FSM), the Republic of the Marshall Islands (RMI), Palau, Kiribati, Nauru, Papua New Guinea, the Solomon Islands, Fiji, New Caledonia, Vanuatu, Tonga, Tuvalu, Tokelau, Niue, French Polynesia, New Zealand, Samoa and the Cook Islands. Moreover, since Australia has a large proportion of Pacific Islander residents (206,673 people, 0.9% in 2016)[33], studies from Australia will also be selected if they report outcomes among Pacific Islanders, including those from Ni-Vanuatu, Tahiti, and the Pitcairn islands. In New Zealand (NZ) and Hawaii, studies including Māori (the indigenous Polynesian people of New Zealand), the indigenous people of New Zealand, and Native Hawaiians of Hawaii will be selected.

Outcomes of interest

The main outcome of interest for this review will be preterm birth among Pacific Islanders. Prevalence of and risk factors associated with preterm birth in those studies will be summarized. Relevant health outcomes of preterm infants will be classified as “short-term” (diagnoses during the initial birth hospitalization) or “long-term” (symptoms or diagnoses after the initial birth hospitalization) outcomes[34, 35]. Health outcomes of mothers who experienced preterm birth will also be examined. Potential neonatal outcomes will include, but will not be limited to, birth weight, fetal growth restriction, fetal death, stillbirths, neonatal intensive care unit (NICU) admission, neonatal, and infant mortality, congenital abnormalities, and long-term health effects. Maternal health outcomes included in our study will be, but will not be limited to, maternal mood effects, and physical health outcomes if there is any report. Existing interventions that have been implemented on preterm Pacific Islander infants will also be reviewed. Studies retrospectively examining changes in healthcare management or practices will not be included in this review; studies describing outcomes of multiple births will also be excluded.

Publication date

The search was completed on November 5, 2020, so we will include studies published prior to this date. No publication date limits were imposed in the databases; that is, each database was searched from inception.

Publication Type

Original studies published in peer-reviewed journals and government reports will be included in this review. Dissertations will be eligible for inclusion. Conference abstracts and master’s theses will not be included in the review since the final study outcomes may not be available/reported, but these will be examined for the purpose of citation chaining. Case reports will also be excluded.

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Language

Studies published in English will be included. If a study is written in a language other than English but the title and abstracts are in English, we will include the paper in the title abstract screening stage and attempt to obtain a translation of the full text should it be determined to be relevant to our outcomes of interest.

Search strategy

Literature search strategies will be developed using two concepts: (1) Pacific Islanders and (2) preterm birth outcomes. Appropriate controlled vocabulary terms and keyword search terms will be used. To the extent allowed by bibliographic database indexing, articles about NZ but only discussing NZ Europeans and articles about Australia but only including aboriginal Australians or European-Australians will not be retrieved.

The search strategy will be developed by author, BW, in consultation with all co-authors, including a medical librarian. The search histories for all databases will be archived on an OSF project[31] in a reproducible format. Our search strategy on MEDLINE ALL (Ovid) is listed in Table 1.

Table 1 Search strategy on MEDLINE ALL (Ovid)

#	Search Terms	Results
1	exp premature birth/ or exp infant, premature/ or exp obstetric labor, premature/ or exp infant, low birth weight/ or exp tocolytic agents/ or exp fetal membranes, premature rupture/ or exp infant, premature, diseases/ or exp retinopathy of prematurity/ or exp respiratory distress syndrome, newborn/ or exp kangaroo-mother care method/ or exp enterocolitis, necrotizing/ or exp bronchopulmonary dysplasia/ or (delivery, obstetric/ and pregnancy outcome/)	196985
2	(((preterm or pre-term) adj2 (deliver* or birth* or labo* or syndrome* or infant* or neonate* or pregnan* or newborn* or born* or rupture* or retinopath* or retin* or bronch* or pulmon* or health*)) or prematur* or pre-matur* or ((short* or small*) adj1 gestation*) or PPROM).mp.	236244
3	1 or 2	327774
4	oceania/ or Australasia/ or exp pacific islands/ or exp oceanic ancestry group/	70217
5	((pacific adj2 (island* or wom#n or mother* or population* or infant* or newborn* or ancestr* or born* or neonate* or pregnan*)) or pasifika or pacifica or Melanesia* or Micronesia* or Polynesia* or Hawai* or "Hawai'i" or "ni'ihau" or niihau* or "kaua'I" or Kauai* or "o'ahu" or oahu* or "moloka'i" or Molokai* or "lana'i" or lanai* or "kaho'olawe" or Kahoolawe* or maui* or austral island* or "tupua'I island" or bass island* or Australasia* or Australia*-pacific or south sea island* or caroline island* or carolin* or Carolinian* or Chamorro* or chuuk* or cook island* or easter island* or fiji* or futun* or guam* or "i-kiribati" or Kiribati* or kosrae* or maori* or mariana island* or mariana* or marshall island* or marshall* or new Caledonia* or niue* or ni-vanuatu or Tuvalu* or Tahiti* or palau* or Nauru* or papua new	152302

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	guinea* or Papua* or Solomon island* or tonga* or Tokelau* or pitcairn* or pitcairn island* or pohnpei* or phoenix island* or rawaki island* or rapa nui* or saipan* or American samoa* or samoa* or New Zealand*).mp.	
6	4 or 5	159981
7	3 and 6	2251
8	exp animals/ not humans/	4752796
9	7 not 8	2017
Search date: Nov 5 2020		

Information sources

We will search the following five databases: MEDLINE ALL (Ovid), EMBASE (Ovid), Web of Science Core Collection (as licensed at Yale, listed in Table 2), the Cochrane Library, and CINAHL (EBSCOhost). Articles published in the Pacific Journal of Reproductive Health and Pacific Health Dialog, two regional journals, will be searched independently, since studies published in these two journals may be highly relevant, yet neither journal is well indexed in major bibliographic databases.

Table 2 Web of science core collection licensed at Yale

Web of Science Core Collection: Citation Indexes (Yale's version)
Science Citation Index Expanded (SCI-EXPANDED) --1900-present
Social Sciences Citation Index (SSCI) --1900-present
Arts & Humanities Citation Index (A&HCI) --1975-present
Conference Proceedings Citation Index- Science (CPCI-S) --1991-present
Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH) --1991-present
Book Citation Index– Science (BKCI-S) --2005-present
Book Citation Index– Social Sciences & Humanities (BKCI-SSH) --2005-present
Emerging Sources Citation Index (ESCI) --2015-present
Web of Science Core Collection: Chemical Indexes (Yale's version)
Current Chemical Reactions (CCR-EXPANDED) --1985-present (Includes Institut National de la Propriete Industrielle structure data back to 1840)
Index Chemicus (IC) --1993-present

We will also conduct citation chaining (backwards and forwards) on papers that meet inclusion criteria and relevant reviews to identify additional studies that may have been missed in the initial search. Recent papers that cited included studies will also be reviewed, based on the citation graph in Web of Science Core Collection.

Reports from international, national, state and territorial government agencies will also be searched manually, including, but not limited to, World Health Organization (WHO), the Centers for Disease Control, Pacific Island Health Officers Association, New Zealand Ministry of Health, Counties Manukau Health, and Australian Government Department of Health.

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Data management

Search results will be downloaded from databases and imported to Covidence (an evidence synthesis web application) for deduplication, title-abstract screening, and full text screening[36, 37]. Other relevant studies identified through hand-searching and citation chaining will also be added to the Covidence screening project. The study selection process will be reported in the PRISMA flowchart.

Selection of sources and evidence

We will pilot the inclusion and exclusion criteria before the main phase of title-abstract screening process. For the pilot, at least two authors will review 50 records, making title-abstract screening decisions (yes/no/maybe) and creating tags to be used in Covidence. Any disagreements will be discussed with the senior author to reach consensus on the interpretation of the inclusion and exclusion criteria. The piloted 50 records will be uploaded directly to the irrelevant or Full Text Screening category of the Covidence project.

Each article will be screened with two steps: (1) title and abstract screening; (2) full text screening. Within each step, publications will be reviewed by two reviewers independently. Disagreements during the screening process on inclusion status will be discussed by the first and senior authors and consensus reached on their inclusion. The reason for exclusion will be recorded during the full-text screening stage. Screening questions is expressed in Table 3. We may record additional exclusion criteria as the review process proceeds.

Table 3 Screening questions

1. Was the article or title-abstract published in the English language?
2. Does the article discuss preterm birth outcomes?
3. Is the Pacific Islander race group discussed in the article?
4. Does the article disaggregate preterm birth outcomes for Pacific Islanders rather than aggregating with other ethnic groups? (Exclude if aggregated)
5. Is the article a conference abstract or a master thesis? (Exclude if yes)
6. Is the article a case report? (Exclude if yes)
7. Is the article focused on outcomes after multiple birth? (Exclude if yes)
8. Does the article report preterm birth among women with specific medical condition only? (Exclude if yes)

Data extraction process

Articles that meet the eligibility criteria and pass the screening questions will be moved to the data extraction phase. The first author, BW, will extract relevant information from the articles and compare their extractions. A customized data-extraction sheet designed by the authors will be used to collect data and information that consist with the objectives of the scoping review (see Table 4). We will pilot this extraction sheet on several studies to confirm all relevant information is being collected by this method. Categories will be revised during the pilot extraction process if modifications are necessary. Extraction fields may change depending on the final included studies.

Table 4 Data extraction categories

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Publication details
Citation (year of publication and first author)
Study type (original study/agency report/dissertation)
Funding source
Study characteristics
Study design/type
Objective(s) of study
Study location/setting (country of origin and data source)
Participant characteristics
Maternal age/ age-range
Pacific Islander sub-groups
Number of participants
Socioeconomic status of participants
Characteristics of study setting
Health system characteristics
Economic development indicators
The Definition of Preterm Birth and Related Items
The Upper and Lower Limit of Gestational Age of the Participants
Gestational Age Measurement Method
Prevalence Estimates of Preterm Birth Reported
Risk Factors Reported
Relevant Short-term Infant Health Outcomes (diagnoses during the initial birth hospitalization)
Relevant Long-term Infant Health Outcomes (symptoms or diagnoses after the initial birth hospitalization)
Relevant Maternal Health Outcomes
Implemented Interventions and Outcomes

Patient and Public Involvement

Our study does not involve patients or the public in the design, conduct, reporting, or dissemination plans.

Study Status

Title-abstract and full-text screening are complete. Citation chaining and grey literature searching is in progress. We expect to complete the study by June, 2022.

PRESENTATION OF FINDINGS

The information extracted from the selected articles will be presented by evidence mapping to express the breadth of research on preterm birth among Pacific Islanders. The data will be displayed according to year of publication, country of origin, study design, number of participants, Pacific Islander subgroups, prevalence estimates reported, risk factors reported, relevant infant and maternal postpartum outcomes reported, and existing interventions reported. Where intervention studies are identified, we will attempt to map their components to the WHO standards for improving quality of maternal and newborn care in health facilities to complement a recent, similar, review by Wilson et al[38]. Data and figures will be summarized to express the

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outcomes. We will provide a narrative summary of the selected studies and discuss how our findings in this review relate to our objectives. If sufficient data is determined to be available to address one or more of our study objectives quantitatively, we will conduct meta-analyses in the future to summarize the findings.

DISCUSSION

The purpose of this scoping review is to understand knowledge gaps about preterm birth and relevant perinatal outcomes among Pacific Islander women and their infants. Our intention is that our review will guide future data collection to address gaps in the existing literature, identify risk factors associated with preterm birth among Pacific Islanders, and assess the evidence for existing interventions to address poor perinatal outcomes associated with preterm birth in this group.

ETHICS AND DISSEMINATION

There are no apparent ethical issues. This study will be published in a peer-reviewed journal.

Contributorship Statement

BW and NLH conceived the study, with the support of ST, VS, KN, and BM. BW, NLH and KN developed the search strategy. BW, KA and NLH wrote the initial draft of the manuscript, with the review of ST, VS, KN, and BM. BW, KA, and NLH will finish the study screening.

Competing Interests

None declared.

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Data Availability Statement

Data sharing is not applicable since no datasets were generated and/or analyzed for this scoping review protocol.

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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.	Title Page
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.	Abstract
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.	1-2
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 conceptualize the review questions and/or objectives.	2-3
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.	N/A
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.	2-3
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.	5-6
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	4-5
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
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.	6-7
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	6-7
Critical appraisal of individual	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe	N/A

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SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
sources of evidence§		the methods used and how this information was used in any data synthesis (if appropriate).	
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	7-8
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.	N/A
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	N/A
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	N/A
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.	N/A
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	N/A
DISCUSSION			
Summary of evidence	19	Summarize 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.	N/A
Limitations	20	Discuss the limitations of the scoping review process.	N/A
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.	N/A
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.	Title Page/ Acknowledgements

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 Web sites.

† 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 19 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).

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