

Inequalities and Barriers to the Use of Health Care among Cancer Patients in the Pacific: A Systematic Review

Mohammadnezhad M^{1*}, Mangum T² and Konrote A³

¹Associate Professor in Public health (Health Promotion), School of Public health and Primary Care, Fiji National University, Fiji.

²Assistant professor, School of Public Health and Primary Care, Fiji national University, Fiji

³Bachelor in Public Health, School of Public Health and Primary Care, Fiji National University, Fiji

*Corresponding author: Masoud Mohammadnezhad, Associate Professor in Public Health (Health Promotion), School of Public health and Primary Care, Fiji National University, Fiji, Tel: +679-9726127; E-mail: masoud.m@fnu.ac.fj

Receive date: Aug 18, 2017; Accepted date: Aug 26, 2017; Published date: Aug 29, 2017

Copyright: © 2017 Mohammadnezhad M, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

Introduction and aim: According to the WHO, the cancer threat is expected to rise by over 70% within the next two decades. To prevent cancer and reduce the consequences of cancer among patients it is essential to understand the barriers. Due to the close relation between the barriers, and also inequality on one side and lack of previous study among Pacific countries on the other side, this systematic review was conducted to understand inequalities and barriers to the use of health care among cancer patients in the Pacific.

Methods: This systematic review was conducted using five of the more frequently use databases and was based on the Cochrane Library Guidelines. Specific keywords were used to attain the relevant studies; with the search being focused on studies published between 1st January 2000 to 1st July 2017, published in English in the peer reviewed journals, and with full text was available. Two independent coders reviewed all studies and the essential information was chosen to develop the data extraction sheet. A descriptive statistical analysis was applied and the frequency and percentage of the studies was shown in tables.

Results: Overall, 38 studies met the inclusion criteria. American Pacific countries conducted a majority of the studies (57.89%) and 28.94% of studies were carried out among both male and female participants. Out of 38 studies, 33 used the quantitative method and 5 studies applied the qualitative. Socio-demographic, personal and subjective, and health facilities related factors were the barriers determined in this study. Lack of knowledge (11 studies) was considered the most common socio-demographic related barrier, while a cultural barrier (9 studies) was the more frequent barrier in personal and subjective. Limited cancer prevention services (11 studies) were determined as the most frequent barrier related to health facilities related factors.

Conclusion: The results of this study highlighted the role of the main barriers in health care among cancer patients in the Pacific. There are many barriers which can lead inequality among Pacific patients; to reduce inequality among cancer patients, health care professionals, policy makers and local ministries of health need to pay more attention to the barriers highlighted in this study.

Keywords: Cancer; Barriers; Inequality; Pacific

Introduction

The World Health Organization (WHO) defines cancer as the “uncontrolled growth and spread of cells”. However, it is also a generic term used to describe a large group of diseases that can affect almost any part of the human body [1]. Cancer develops when the body’s normal control mechanisms stop working and the body’s cells begin to mutate and multiply into tumor cells [2]. Cancer can affect anyone; young and old, rich and poor, men, women and children. Globally in 2015, cancer was found to be the cause of 8.8 million deaths, making it the second leading cause of death [3]. In addition to this in 2015, common cancers such as lung cancer, liver and colorectal cancer made up 3.22 million of the total cancer deaths toll [4]. According to the WHO, the cancer threat is expected to rise by over 70% within the next two decades [1]. Despite this, it was determined that only 1 in 5 low to middle income countries have the necessary data to derive cancer

related policies, which can affect the prevention of cancer [5]. However, in countries such as the US, cancer statistics appear to be dropping with recorded 1.8% and 1.4% cancer rate decreases in males and females, respectively, from the year 2004 to 2013 [6].

Moreover, there is indeed an issue of cancer within the Pacific. When taken into consideration, it is evident that a majority of Pacific islands are still developing countries. Studies conducted found that Pacific island nations have alarming incidence to mortality ratios as a result of the cancer burden and lack of resources [7]. Astoundingly, the most common cancers in the Pacific were lung, stomach, colorectal, breast, and cervical cancers [8]. Additionally, in the year 2008, the Western Pacific had a total of 4.07 million new cases, with the gender distribution being 2.31 million males and 1.75 million females. As a result of this, there was a total of 2.6 million cancer related deaths that year within the Western Pacific region [9]. This shows an alarming rate of cancer in the Pacific which needs to be monitored. This high incidence within the Pacific has been attributed to barriers and inequalities in the available health care systems. Barriers are defined as

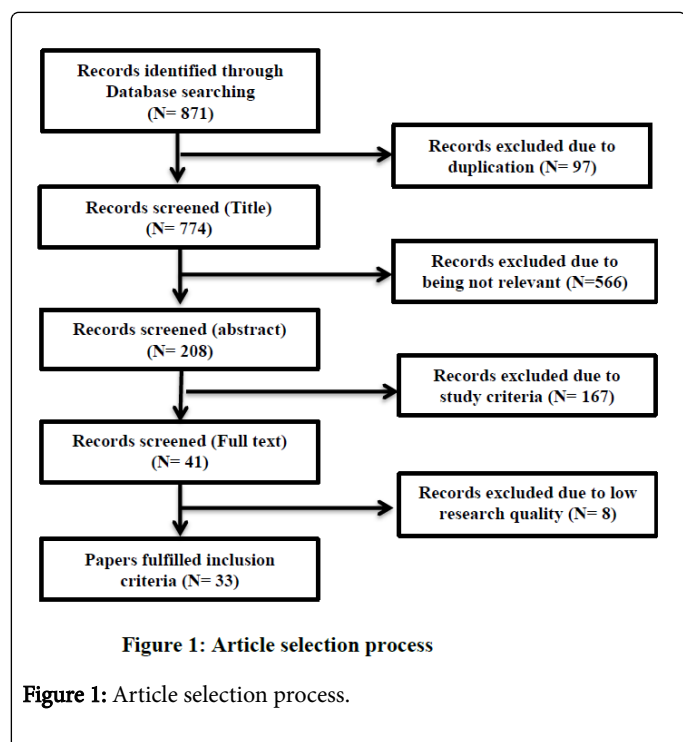
obstacles that hinder progress, while inequalities refer to inconsistencies or unjust imbalances [10]. In terms of health care, these barriers and inequalities can limit an individual's access to certain services, making them a serious concern, especially for regions such as the Pacific. Hence, this systematic review set out to assess the available research on the possible barriers and inequalities that are preventing Pacific islanders from receiving adequate cancer related care.

Methodology

This systematic review was conducted based on the Cochrane Library Guidelines. The following databases were used to gather the relevant studies including: MEDLINE, Scopus EMBASE, WEB of Science Electronic Database, PubMed and Psych INFO, which had been used frequently in studies related to the topic of cancer.

To obtain the relevant articles, medical subheadings (MeSH) and other keywords were used including, Barriers, "Cancer" or "Tumor". The articles accepted into the study were based on a set of inclusion criteria which included articles published from January 1st 2000 to 1st July 2017, written in the English language, peer reviewed and available in full text. All study designs were included in the study.

The articles were review by two independent coders in order to reduce the bias when selecting studies. Three steps were conducted in order to attain the relevant articles. The first step involved scanning the titles of the articles and all titles deemed irrelevant were excluded. The next step focused on reviewing the abstracts of the articles in which all irrelevant articles were removed. Once this was done, the next step was to analyze the full text further, removing any irrelevant articles. Thirty-three articles met the inclusion criteria. The bibliographies of the remaining articles were then searched to obtain any further relevant materials (Figure 1) [11,12].



Five studies were then added for a total of thirty-eight included studies. The full text of the articles were then printed and analyzed to

create a data extraction sheet. The Data extraction sheet was developed using four main sections which were: study information, population, methodology and results (Table 1). Descriptive analysis was applied to the extraction sheet and the frequencies and percentages were recorded.

Type	Factor	Frequency
Socio-demographic	Low income	7
	Lack of Knowledge	11
	Communications and Language	5
	Loss of Support	3
	Geographical/transportation	4
Personal and Subjective factor	Religion	3
	Culture	9
	Gender	1
	Ethnicity	3
	Insurance	2
	Time	7
Health facilities related factors	Limited cancer prevention services	11
	Incomplete treatment	4
	Lack of resources	4
	Limited Access to Treatment	2
	Lack of cancer robust registry	2
	Lack of health care dollar	2
	Limited access to health services	8
	Lack of imbursement for cancer planning	2
	Lack of screening	4
	Poor health infrastructure	2
	Lack of skilled personnel	6
	Overloaded staff	7

Table 1: Frequency of barriers reported in the studies.

Results

The general characteristics of the studies are shown in Table 2. The results showed that a majority of studies (36.8%) were conducted in 2000 to 2005. American Pacific countries conducted most of the studies (57.89%), followed by South Pacific countries (28.94%) and Asia Pacific countries (13.15%). While approximately half of the studies (42.10%) didn't mention the gender of people who participated in the studies, 28.94% of studies were carried out among both males and females.

Most of the studies didn't mention the age of participants. Among those that mentioned the gender of the participants, 26.31% were conducted among adults and older. One study was conducted among

older and one study focused on participants aged less than 18 years old.

Variables	Frequency	Percentage
Year of studies		
2000-2005	14	36.8
2006-2010	12	31.5
2011-2016	12	31.5
Region of conducting studies		
Asia Pacific	5	13.15
South Pacific	11	28.94
American Pacific	22	57.89
Gender of participants		
Male	4	10.5
Female	7	18.42
Male and female	11	28.94
Not stated	16	42.1
Age of participants		
Children and adolescents	1	2.6
Adolescent, adults and older	3	7.8
Adults and older	10	26.31
Older	1	2.6
Not stated	23	60.52

Table 2: General characteristics of the studies.

The total number of participants who were engaged in these studies was 5,723,360. Table 3 shows the methodological characteristics of the studies. Out of 38 studies, 33 studies used the quantitative method and 5 studies applied the qualitative. A majority (65.79%) of the studies didn't mention the sampling methods, while 18.42% of the studies used purposive sampling. Most of the studies (47.46%) used questionnaire for collecting the data.

Variables	Frequency	Percentage
Type of studies		
Quantitative	33	86.84
Qualitative	5	13.16
Sampling method		
Purposive	7	18.42
Snowball	1	2.6
Random	4	10.5
Convenience	1	2.6

Not stated	25	65.79
Data collection tool		
Questionnaire	18	47.46
Focus group discussion	3	7.8
Not stated	17	44.74

Table 3: Methodological characteristics of the studies.

The common barriers of cancer perceived by the participants were categorized into three sections including socio-demographic, personal and subjective, and health facilities related factors. Lack of knowledge (11 studies) was considered the most common socio-demographic related barrier, followed by low income (7 studies), communication and language barriers (5 studies), geographical/transportation (4 studies), and lack of support (3 studies).

Cultural barriers (9 studies) were the most frequent barrier in personal and subjective factors. It was followed by lack of time (7 studies), religion and ethnicity (each 3 studies), insurance (2 studies) and gender (1 study). Health facilities related factor was determined as the most included barrier. Limited cancer prevention services (11 studies), limited access to health services (8 studies) and overloaded staff (7 studies) were more frequent barriers; while limited access to treatment, lack of cancer robust registry, lack of health care dollar, and poor health infrastructure (each 2 studies) were less frequent barriers in this section. Incomplete treatment, lack of resources, and lack of screening (each 4 studies) were also highlighted as barriers related to health facilities.

Discussion

Through the duration of this study it can be stated that there is indeed evidence of barriers and inequalities in terms of cancer related health services within the Pacific. The barriers identified in this study were placed into three major categories including, socio-demographic, personal/subjective and health facilities related barriers. Out of the thirty-eight articles included in this study, health facilities related factors accounted for the majority of the barriers, with limited cancer prevention services being the most common. These preventative services range from screening to vaccinations, such as the HPV vaccine, and in a study conducted by Garland S were found to be minimal [13]. The study then went on to suggest that preventative services such as these were the key in the prevention or reduction of the cancer burden in the Pacific.

The next health service related barrier identified in the study was the lack of access by patients to cancer services. In a study carried out by Steven Coughlin to assess factors related to health care access, it was found that rural areas had lower cancer checks due to the presence of fewer clinics than in urban areas [14]. In addition to this, there is more evidence provided by Dr. Elizabeth Ward where her team listed geography as a structural barrier towards cancer treatment and prevention services [15]. This shows that patients are not willing to travel to services that are out of the way, reducing the likelihood of early detection or preventative action. Hence, access is indeed a barrier towards cancer services within the Pacific.

Moreover, throughout this study a common finding pointed towards a lack of skilled personnel within the Pacific region. The presence of skilled and capable personnel is favorable to the running of proper

cancer services and the absence of such personnel can be considered a major barrier to cancer care. This lack of personnel can be attributed to many different reasons, however, two major ones appear to be a lack of resources and high worker migration rates [16]. According to a survey by Richard Brown, it was found that the migration of medical professionals from the Pacific is indeed an issue within countries such as Fiji, Tonga and Samoa [17]. Reported in his findings, Brown attributed the high migration rates to the large wage differences between Pacific countries and their more developed counterparts, leading medical professionals to pursue more lucrative career opportunities [18]. This factors in to the lack of resources highlighted in this systematic review as the government's lack the funding and capabilities to retain these workers, reducing the availability of health services. In the absence of trained personnel, services such as diagnosis and treatment are limited and professionals from outside countries need to be brought in whose services cannot be sustained due to a lack of resources. Hence, worker retention is necessary to improve cancer related services in the Pacific.

Additionally, the study found that socio-demographic barriers were also evident in the Pacific, with the major barrier being a lack of knowledge. According to studies by Peek and McFarland, cancer knowledge is a matter of grave concern that needs to be addressed in the Pacific people [19,20]. In the study set out by McFarland, it was found through a survey that women were less likely to carry out preventative action for cervical cancer due to a lack of knowledge on the available services, and in certain cases, the risks of contracting cancer [20]. This lack of knowledge reduces the patient's chances of early detection and increases the risk of permanent damage or fatality. A similar study conducted a survey indicating a lack of knowledge regarding cancer among Pacific and Vietnamese women [21]. The studies all went on to explain that the barrier of knowledge needs to be addressed and that cancer education needs to be strengthened, especially in regions such as the Pacific.

The next major barriers identified through this study were that of income and insurance. In a study conducted by Thomas Smith, it was found that the direct costs for cancer services are constantly rising and in the US alone is expected to reach \$173 billion dollars by the year 2020 [22]. Similarly, Linda Carlson conducted a literature review to assess the cost effectiveness of psychosocial needs of cancer patients due to the high costs of cancer related services. The study concluded that more cost evaluations need to be carried out, especially in terms of service evaluations, in order to highlight the high costs of care [23]. These high costs are concerning due to most Pacific countries falling into the low to middle income country categories. The *Journal of Paediatric Hematology* found that the burden of cancer treatment costs were centered on out of pocket payments, such as travel, communication and accommodation [24].

A lack of insurance is also considered a barrier due to the high costs of cancer services rendering out of pocket payments unfeasible. In the US, a study was conducted to discover an association between insurance and cancer care utilization. The study highlighted that insurance was indeed a barrier towards cancer care, and if not addressed will prevent access to prevention detection and treatment services among the public [25]. In addition to this, Helen investigated the willingness of patients to participate in clinical trials based off of insurance information and found that individuals without insurance were less likely to enroll in treatment trials [26]. This shows that insurance plays an important role in an individual's decision to accept

treatment or use cancer services, with the absence of insurance acting as a barrier.

The last major categories of barriers found in this study were personal and subjective barriers. In terms of personal barriers, the largest one was that of culture. In the Pacific, it is a known fact that culture plays an important role in the lives of the people and even has influence over medical decisions. Despite this, Gulshan Karbani, set out to investigate the relationship between culture and knowledge about breast cancer. Karbani found that cancer in Asian Pacific individuals brought about stigma and had direct impact on marital issues and in some cases led to marital breakdowns [27]. Additionally, certain cultures move individuals away from Western medicines and focus more on traditional and herbal medicines. This is dangerous as herbal medicines are often untested and may not necessarily be of benefit to the patient [28]. Other researchers such as Hee Yun Lee, who studied culture as a barrier to cancer services, found that the only way to target culture oriented populations was to redesign the service with the target of culture in mind [29]. An additionally important aspect of this is native language, as the Pacific is home to a wide variety of unique languages. This is further backed in a study where the researchers discovered that language needed to be considered when improving patient experience in relation to cancer care [30]. Hence, culture is indeed of importance towards cancer services and if not monitored can become a barrier.

Aside from the barriers mentioned above, the study identified a few minor barriers which included gender, ethnicity, family support, and poor health infrastructure. These barriers are suspected to play vital roles in cancer health services; however, there was little evidence of it in the reviewed literature.

Furthermore, the study had set out to identify inequalities involving cancer care within the Pacific. Despite the majority of the studied literature focusing on barriers towards health care, inequalities were indeed evident. The major inequality identified appears to be based off of ethnicity. In a study conducted by Dr. Mona Jeffries in New Zealand to link ethnic inequalities and cancer survival, found that the Maori 5 year survival rate was lowest when compared to other non-Pacific people [31]. In addition to this, the study also found that other Pacific ethnicities also fell behind the non-Pacific population in terms of cancer survival. Similarly, a study by Nancy Krieger (2002) found that despite there being little difference between the incidence rates of breast cancer between African American women and white American women, there appeared to be a higher mortality rate among the African American women [32]. This may be due to reluctance to seek medical attention or cultural aspects. However, a major recommendation by the reviewed studies is that further research needs to be conducted in regard to the disparities.

Overall, it can be said that barriers and inequalities will always be present in terms of cancer services. However, as of late, certain countries are making strides to reduce these barriers and inequalities, meaning that Pacific nations need to follow in their footsteps and work towards better healthcare. A major example of this is the United States (US) who introduced Medicare into the country, which is a form of insurance [33]. This works by subsidizing certain medical costs and reducing the burden of the low income earning members of the population, allowing them equal access to proper health care. Other initiatives similar to this include the heavily subsidized medical care in Fiji, which covers basic services such as check-ups and clinics, making them free to the public [34]. The downside, however, is that this does not extend to the more costly services required for cancer patients, but

may aid in early detection [35]. Hence, more research needs to be conducted in order to determine the necessary methods of removing these barriers and inequalities in the Pacific (Table 4).

No.	Study Information	Population	Methodology	Results
1	Untalan et al. [36] Year: 2004 Type of Study: Descriptive study (cross-sectional) Country : Hawai'i	Population: Total 195 No. of Male: 116 No. of Female: 79 Age group: Ranges from 0-19 yrs.	Place: Hospital Sampling method: Random Data collection tools: Not stated	Barriers: -Paediatric cancer patients referred from the Pacific Islands for treatment in Hawai'i had a higher relative risk of death, of not receiving treatment in a timely manner -Not completing treatment -lost to follow-up more than paediatric cancer patients that were residents of Hawai'i -Financial difficulties -Gaps in communication with providers due to language and cultural differences - Loss of social support
2	Ou et al. [37] Year: 2004 Type of Study: Descriptive study Country : Kiribati	Population: 237 Cases No. of Male: 93 No. of Female: 144 Age Group : 41-50 yrs.	Place: Hospital Sampling method: Not stated Data collection tools: Interview	Barriers: -The lack of a robust cancer data tracking and surveillance system -Lack of resources to institute a technologically and medically sustainable cancer control system was apparent
3	Ou et al. [38] Year: 2004 Types of Study: Descriptive study Country : Nauru	Population : 124 No. of Male : 46 No. of Female: 78 Age Group : Ranges from 10-86 yrs.	Place: Hospital Sampling method: Not stated Data collection tools: Not stated	Barriers: -Incomplete ascertainment of cancer cases because of historical events -Lack of robust cancer registry -Systematic cancer surveillance system
4	Beltran et al. [39] Year: 2016 Types of Study: Cross-Sectional study Country: United States	Population: 192 No. Males: 71 No. Females: 121 Age Group: Male 19-62 yrs Females age ranges from 18-50 yrs.	Place: Not stated Sampling Method: Snowball Data collection tools: Survey and Interview	Barriers: -Lack of knowledge (awareness)
5	USAPIN [40] Year: 2006 Type of Study: Descriptive Study Country: US Associated Pacific Island Nation (USAPIN like Republic of Marshall Islands, Republic of Belau and Republic of FSM)	Population: Not stated No. Male: Not stated No. Female: Not stated Age Group : Not stated	Place: Not Stated Sampling Method: Not stated Data collection tools: Not stated	Barriers: Health Care Infrastructure -The lack of health care dollars -Poor health care infrastructure Care Surveillance Infrastructure -No surveillance system Knowledge Level -Lack of Knowledge Cancer Services -Limited cancer prevention
6	Thompson et al. [41] Year : 2014 Type of Study: Cross-Sectional Country : United States	Population: 800,000 No. Male: 9,363 No. Female: 62,543 Age Group: ranges from 21-75 yrs in Women Men age 50-75 yrs.	Place: Outpatient health care Sampling method: Random Data collection tools: Not stated	Barriers: -Gender -Culture -Language Barriers
7	Foliaki et al. [42] Year : 2014 Type of Study: Cross-Sectional study Country: Fiji	Population: 1,261 cases No. Male: No. Female: 1,261 Age Group: Age ranges 16-64 yrs.	Place: Health sub district Sampling Method: Not stated Data collection tools: Survey	Barriers: Barriers: -Accessibility to health facilities -Difficulties in following up screening of positive women in such a high risk population -Overloaded with work, especially nurses -Low knowledge level of the population

8	Asia-Pacific Working Party on Prevention of Hepatocellular Carcinoma [43] Year: 2010 Type of Study: Descriptive Country: Asia Pacific	Population: Not stated No. Male: Not stated No. Female: Not stated Age Group: Not stated	Place: Not stated Sampling Method: Not stated Data collection tools: Not stated	Barriers: Widespread application of HCC surveillance in Asia-Pacific countries depends on economic factors and health-care priorities
9	Ka'ano'i et al. [44] Year: 2004 Type of Study: Cross-Sectional (Survey) Country: Hawai'i	Population: 454 Internist, family and general practitioners, and OB/GYN specialists. No. Male: Not stated No. Female: Not stated Age Group: Not stated	Place: Health care Sampling Method: Not stated Data collection tools: Questionnaires	Barriers: -Lack of awareness -Limited support staff -Time constraints -Not aware of ongoing prevention trials
10	Tajima and Moore [45] Year: 2002 Type of Study: Descriptive Country: Asia Pacific	Population: Not stated No. Male: Not stated No. Female: Not stated Age Group: Not stated	Place: Not stated Sampling Method: Not stated Data collection tools: Not stated	Barriers: -Culture
11	Juon et al. [46] Year: 2008 Type of Study: Descriptive Country: Asia Pacific persons in the United States	Population: 1,775 No. Male: 619 No. Female: Age Group : 20-49 yrs.	Place: Church and school Sampling Method: Not stated Data collection tools: Not stated	Barriers: -Religious service -Lack of time for screening administrator to finish recording data while assessing test -Low computer skills/knowledge -Poor health facilities
12	Garland et al. [13] Year: 2008 Type of study: Case Studies Country: Asia Pacific Regions	Population: 3,332,258 No. Male: Not Stated No. Female: Not stated Age Group: Not stated	Place: Not Stated Sampling Method: Not stated Data collection tools: Not stated	Barriers: -Gender
13	Tsark [47] Year :2007 Type of Study: Descriptive Country : US-associated Pacific Island Countries	Population: Not stated No. Male: Not stated No. Female: Not stated Age Group: Not stated	Place: Community (4 states) Sampling Method: Not stated Data collection tools: Survey	Barriers: -Limited ability to measure cancer burden -A lack of programs, equipment, and trained personnel to detect and treat cancer -Geographical barriers which is time consuming and too costly -Limited local dollars allocated to cancer education and awareness
14	Wong and Kawamoto [48] Year: 2010 Type of Study: Cross-sectional study (Survey) Country: Hawai'i	Population: 10 No. Male: Not stated No. Female: 10 Age Group : 28-69	Place: Not stated Sampling Method: Not stated Data collection tools: Not stated	Barriers: There is limited knowledge about cervical cancer Lack of health information in general Fear, privacy concerns Lack of awareness and cultural beliefs
15	Hubbell et al. [49] Year: 2004 Type of Study: Descriptive study Country: United States	Population: 797,670 No. Male: Not stated No. Female: Not stated Age Group: Not stated	Place: Not stated Sampling Method: Not stated Data collection tools: Not stated	Barriers: -Insurance -Poverty -Unemployment
16	Singer et al. [50] Year: 2000 Type of Study: Cross-sectional Country: United States	Population: 66,952 No. Male No. Female: 66,952 Age Group: above 18 yrs	Place: Not stated Sampling Method: Not stated Data collection tools: Not stated	Barriers: -Lack of access to or use of primary care also affects the screening rate -Lack of insurance -Low income and lack of a usual source of care
17	Kagawa-Singer et al. [51] Year: 2006 Type of Study: Qualitative (Focus Group) Country: United States	Population:173 No. Male: 84 No. Female: 89 Age Group: Not stated	Place: Not stated Sampling Method: Not stated Data collection tools: not stated	Barriers: -Barriers to screening -Lack of health insurance (both Medicaid and low cost insurance products) -Language and communication barriers -Lack of transportation to and from screening services

				<ul style="list-style-type: none"> -Lack of time off from work -Lack of child care -Long waits at doctors' offices -Lack of ethnic-specific female doctors -Cultural modesty, especially when screened by male doctors
18	<p>Kagawa-Singer et al. [51] Year: 2006 Type of Study: Cross-sectional (Qualitative) Country: United States</p>	<p>Population: 6,048 Asian and Pacific Island Women No. Male: Not stated No. Female: 6,048 Age Group: 50 yrs +</p>	<p>Place: Not stated Sampling Method: Not stated Data collection tools: Not stated</p>	<p>Barriers:</p> <ul style="list-style-type: none"> -Most of the Asian and Pacific islanders especially women have barriers to screening such as -Lack of access to health care services -Language Barriers -Cultural -Poverty -No Health insurance.
19	<p>Lee et al. [52] Year: 2011 Type of Study: Descriptive Country: United States</p>	<p>Population: 52,491 No. Male: Not stated No. Female: Not stated Age Group: 50 yrs.+</p>	<p>Place: Not stated Sampling Method: Not stated Data collection tools: Not stated</p>	<p>Barriers:</p> <ul style="list-style-type: none"> -Health insurance -Those patients with no health insurance find it difficult to acquire treatment. -Access to health care -Socio-economic status -Cultural beliefs -Cancer screening literacy -Geographical location
20	<p>Tanjasiri and Tran [53] Tanjasiri and Tran [53] Year: 2008 Type of Study: Descriptive Country: United States</p>	<p>Population: Not stated No. Male: Not stated No. Female: Not stated Age Group: Not stated</p>	<p>Place: Not stated Sampling Method: Not stated Data collection tools: Not stated</p>	<p>Barriers:</p> <ul style="list-style-type: none"> -Financial resources - 7/8 states did not have enough funding to develop and implement programs -Lack of staff skills in specific areas -Difficulty in recruiting appropriate staff to run programs -Unavailability of volunteers -Cultural issues
21	<p>Robinson et al. [54] Year: 2013 Type of Study: Descriptive Country: United State</p>	<p>Population: Not stated No. Men: Not stated No. Female: Not stated Age Group : Not stated</p>	<p>Place: Not stated Sampling Method: Not stated Data collection tools: Not stated</p>	<p>Barriers:</p> <ul style="list-style-type: none"> -Lack of full coverage of preventive health services -Limited survivorship care training for health care providers -Lack of reimbursement for cancer care planning
22	<p>Steele et al. [55] Year: 2013 Type of Study: Qualitative Study (Cross-sectional) (Surveillance). Country: United States</p>	<p>Population: 294,843 No. Men: 4,500 No. Female: 4,167 Age Group : 60 +</p>	<p>Place: Not Stated Sampling Method: Not stated Data collection tools: Not stated</p>	<p>Barriers:</p> <ul style="list-style-type: none"> -Lack of full coverage of preventive health services -Limited survivorship care training for health care providers -Lack of reimbursement for cancer care planning -Total number of API cases was small
23	<p>Mishra et al. [56] Year: 2007 Type of Study: Cross-sectional Country: Samoa</p>	<p>Population: 809 No. Men: Not stated No. Female: 809 Age Group : 42 years</p>	<p>Place: Not stated Sampling Method: Not stated Data collection tools: Not stated</p>	<p>Barriers:</p> <ul style="list-style-type: none"> -Accessibility to Health services -Cultural beliefs
24	<p>Wu et al. [57] Year: 2010 Type: Cohort Study Country: American Samoa</p>	<p>Total: 55 Male: Female: 55 Age: 19 and older</p>	<p>Place: Communities Sampling Method: Purposive Data collection tools: Focus group</p>	<p>Barriers:</p> <ul style="list-style-type: none"> -Male doctors (female feel uncomfortable) -Limited services (recommended treatment for early breast cancer lumpectomy and radiation but currently only treatment modality available is mastectomy -Long waits
25	<p>Katz et al. [58]</p>	<p>Total: Not stated</p>	<p>Place: Not stated</p>	<p>Barriers:</p>

	Year: 2004 Country: Freely associated U.S Pacific islands jurisdiction	Male: Not stated Female: Not stated Age: Not stated	Sampling Method: Not stated Data collection tools: Not Stated	-Access to treatment
26	Ruidas et al. [59] Year: 2004 Study: Cohort Country: American Samoa	Total: Not stated Male: Not stated Female: Not stated Age: Not stated	Place: Community Sampling Method: Not stated Data collection tools: Survey and Interview	Barriers: -Lack of resources -Lack of cancer outreach and community awareness -Needs of health professionals -Laboratory capacity for cancer screening and detections -Comprehensive and coordinated system of cancer services
27	Wong et al. [60] Year: 2004 Country: Republic of Palau (Belau)	Total: 122 Male: 54 Female: 68 Age: Not stated	Place: Health care and community Sampling Method: Convenience and random Data collection tools: Interview	Barriers: -Limited cancer treatment (patients referring to other places for treatment)
28	Kroon et al. [61] Year: 2004 Country: Republic of the Marshall Islands	Total: 65 Male: 29 Female: 36 Age: Not stated	Place: Community Sampling Method: Purposive Data collection tools: Not stated	Barriers: -Limited services (patient seeks treatments outside of the country)
29	Pobutsky et al. [62] Year: 2004 Country: Hawaii (U.S)	Total: Not stated Male: Not stated Female: Not stated Age: Not stated	Place: Communities Sampling Method: Not stated Data collection tools: Land based telephone survey	Barriers: Access to health care services
30	Townsend et al. [63] Year: 2014 Study: Cross-sectional Country: U.S affiliated Pacific Countries	Total: Not stated Male: Not stated Female: Not stated Age: Not stated	Place: Community and school Sampling Method: Convenience Data collection tools: Survey	Barriers: -Inadequate technologies resources Cost of services
31	Aitaoto et al. [64] Year: 2012 Study: Cohort Country: Hawaii (U.S)	Total: 567 Male: Not stated Female: Not stated Age: 18-75	Place: Community Sampling Method: Not stated Data collection tools: Screening test	Barriers: -Access to health services (88%)
32	Tsark [47] Year: 2007 Study: Cross-sectional Country: U.S associate Pacific	Total: Not stated Male: Not stated Female: Not stated Age: Not stated	Place: Health care, Community, hospital and school Sampling Method: Purposive Data collection tools: Survey	Barriers: -Limited ability to measure cancer burden and lack of programs -Limited equipment, and trained personnel to detect and treat cancer -Most cancers are diagnosed in late stages when survival is compromised and care is most costly
33	Aitaoto et al. [65]	Total: 33 Male: Not stated Female: Not stated Age: Not stated	Place: Community Sampling Method: Not stated Data collection tools: Focus group and in-depth interview	Barriers: -Limited understanding of breast and cervical cancer -Competing priorities -Lack of transportation
34	Nagelhout et al. [66] Year: 2017 Study: Descriptive Country: United States	Total:197 Male: 74 Female: 116 Age: Not stated	Place: Community Sampling Method: Purposive Data collection tools: Survey	Barriers: -Fear -Time -Lack of knowledge
35	Dang et al. [67] Year: 2010 Study: Descriptive Country: United States	Total: 1,708 Male: Female: 1,708 Age: Not stated	Place: Community Sampling Method: Purposive Data collection tools: Interviews and Surveys	Barriers: -Education -Employment -Resources -Language
36	Singer et al. [50] Year: 2000 Study: Descriptive Country: United States	Total: 66,592 Male: Female: 66,592 Age: Not stated	Place: Community Sampling Method: Randomized Data collection tools: Surveys	Barriers: -Poverty -Education -Insurance
37	Tanjasiri et al. [68]	Total: 298,460	Place: Community	Barriers:

	Year: 2002 Study: Descriptive Country: United States	Male: Not stated Female: Not stated Age: Not stated	Sampling Method: Purposive Data collection tools: Surveys, Focus Groups, Interviews	-Insurance -Fear -Trust -Religion
38	Cullerton et al. [69] Year: 2016 Study: Descriptive Country: Australia	Total: 69 Male: 20 Female: 44 Age: Not stated	Place: Community Sampling Method: Purposive Data collection tools: Surveys	Barriers: -Fear -Time -Transportation -Knowledge

Table 4: Data extraction sheet.

Conclusion

At the end of this study the available literature was able to provide a glimpse into the barriers and inequalities of cancer health care within the Pacific. A total of thirty-eight articles were included within the study, with 33 quantitative and 5 qualitative studies. Despite this, only sixteen articles focused on Pacific island countries, while 22 focused on Pacific islanders living abroad in countries such as the US. This shows that there is indeed a need for more research within the Pacific islands to tackle the issue of barriers and inequalities to cancer related health care in the Pacific.

The team attempted to strengthen the study by including articles dating back to the year 2000 to the year 2017; however, there were some limitations. The first limitation was the rejection of grey literature and the second was the omission of literature not in the English language.

References

- World Health Organization (2008) Fact sheet 297: Cancer, Geneva.
- Stewart B, Wild CP (2017) World cancer report 2014. Health.
- Kerr DJ, Midgley R (2010) Can we treat cancer for a dollar a day? Guidelines for low-income-countries. *N Engl J Med* 363: 801-803.
- Li L, Lei Y, Wu S, Chen J, Yan D (2017) The health economic loss of fine particulate matter (PM 2.5) in Beijing. *J Clean Prod*.
- Frenk J (2009) Building awareness promoting early detection and combating prejudices: Keys in the fight against breast cancer. *Salud pública de México* 51: 135-137.
- Siegel RL, Miller KD, Jemal A (2015) Cancer statistics. *CA Cancer J Clin* 65: 5-29.
- Sung JJ (2005) Increasing incidence of colorectal cancer in Asia: Implications for screening. *Lancet Oncol* 6: 871-876.
- Jemal A, Siegel R, Ward E, Hao Y, Xu J, et al. (2008) Cancer statistics. *CA Cancer J Clin* 58: 71-96.
- Moore MA, Baumann F, Foliaki S, Goodman MT, Haddock R, et al. (2010) Cancer epidemiology in the Pacific islands-past, present and future. *Asian Pac J Cancer Prev* 11: 99.
- Dictionary OE (2015) Oxford University Press.
- Mohammadnezhad M, Alqahtani N, Mangum T (2017) Prevalence and risk factors of cancer among Pacific Islanders: A systematic review study. *JSciMed Central* 3: 10-25.
- Mohammadnezhad M (2017) Common determinant and prevention strategies of cancer in the Pacific Countries: A systematic review. *Eur J Prev Med* 5: 51-59.
- Garland SM, Cuzick J, Domingo EJ, Goldie SJ, Kim YT, et al. (2008) Recommendations for cervical cancer prevention in Asia Pacific. *Vaccine* 26: 89-98.
- Coughlin SS, Leadbetter S, Richards T, Sabatino SA (2002) Contextual analysis of breast and cervical cancer screening and factors associated with health care access among United States women. *Soc Sci Med* 66: 260-275.
- Ward E, Jemal A, Cokkinides V, Singh GK, Cardinez C, et al. (2004) Cancer disparities by race/ethnicity and socioeconomic status. *CA Cancer J Clin* 54: 78-93.
- Bandara A (2006) Emerging health issues in Asia and the Pacific: Implications for public health policy. *Asia-Pacific Development Journal* 12: 33.
- Brown RP, Connell J (2004) The migration of doctors and nurses from South Pacific Island Nations. *Soc Sci Med* 58: 2193-2210.
- Kingma M (2006) Nurses on the move: Migration and the global health care economy. Cornell University Press.
- Peek ME, Han JH (2004) Disparities in screening mammography. *J Gen Intern Med* 19: 184-194.
- McFarland DM (2003) Cervical cancer and pap smear screening in Botswana: Knowledge and perceptions. *Int Nurs Rev* 50: 167-175.
- Pham CT, McPhee SJ (1992) Knowledge, attitudes and practices of breast and cervical cancer screening among Vietnamese women. *J Cancer Educ* 7: 305-310.
- Smith TJ, Hillner BE (2011) Bending the cost curve in cancer care. *Mass Medical Soc* 21: 2060-2065.
- Carlson LE, Bultz BD (2004) Efficacy and medical cost offset of psychosocial interventions in cancer care: Making the case for economic analyses. *Psychooncology* 13: 837-849.
- Heath JA, Lintuuran RM, Rigguto G, Tokatlian N, McCarthy M (2006) Childhood cancer: Its impact and financial costs for Australian Families. *J Pediatr Hematol Oncol* 23: 439-448.
- Ward E, Halpern M, Schrag N, Cokkinides V, DeSantis C, et al. (2008) Association of insurance with cancer care utilization and outcomes. *CA Cancer J Clin* 58: 9-31.
- Parsons HM, Harlan LC, Seibel NL, Stevens JL, Keegan TH (2011) Clinical trial participation and time to treatment among adolescents and young adults with cancer: Does age at diagnosis or insurance make a difference? *J Clin Oncol* 29: 4045-4053.
- Karbani G, Lim JN, Hewison J, Atkin K, Horgan K, et al. (2011) Culture, attitude and knowledge about breast cancer and preventive measures: A qualitative study of South Asian breast cancer patients in the UK. *Asian Pac J Cancer Prev* 12: 1619-1626.
- Pal SK, Shukla Y (2003) Herbal medicine: Current status and the future. *Asian Pac J Cancer Prev* 4: 281-288.
- Lee HY, Vang S (2010) Barriers to cancer screening in Hmong Americans: The influence of health care accessibility, culture, and cancer literacy. *J Community Health* 35: 302-314.
- Ayanian JZ, Zaslavsky AM, Guadagnoli E, Fuchs CS, Yost KJ, et al. (2005) Patients' perceptions of quality of care for colorectal cancer by race, ethnicity, and language. *J Clin Oncol* 23: 6576-6586.
- Jeffreys M, Stevanovic V, Tobias M, Lewis C, Loschmann EL, et al. (2005) Ethnic inequalities in cancer survival in New Zealand: Linkage study. *Am J Public Health* 95: 834-837.
- Krieger N (2002) Is breast cancer a disease of affluence, poverty, or both? The case of African American women. *Am J Public Health* 92: 611-613.

33. Medicare Payment Advisory Commission (2007) Report to the congress, medicare payment policy.
34. Roberts G (2011) The Fiji Islands health system review. *Health Syst Transit* 1: 1-150.
35. Durairaj V (2007) Enhancing equity in access to health care in the Asia-Pacific region: Remediable inequities. Report prepared for the United Nations Regional Thematic Working Group on Health WHO and UNFPA.
36. Untalan F, Woodruff K, Hardy C, Liao M, Krupitsky D (2004) Disparities in outcomes for pediatric cancer patients treated in Hawai'i: Comparing Hawai'i residents to children referred from the Pacific Islands. *Pac Health Dialog* 11: 114-119.
37. Ou AC, Kienene T, Tenaua K, Etheredge GD, Palafox NA (2004) Epidemiology of cancer in the Republic of Kiribati. *Pac Health Dialog* 11: 88-93.
38. Ou AC, Waidubu G, Etheredge GD, Palafox NA (2004) Epidemiology of cancer in the Republic of Nauru. *Pac Health Dialog* 11: 101-106.
39. Beltran R (2016) HPV literacy and associated factors among hmong American immigrants: Implications for reducing cervical cancer disparity. *J Community Health* 41: 603-611.
40. USAPIN (2007) Pacific regional comprehensive cancer control plan.
41. Thompson CA, Gomez SL, Chan A, Chan JK, McClellan SR, et al. (2014) Patient and provider characteristics associated with colorectal, breast, and cervical cancer screening among Asian Americans. *Cancer Epidemiol Biomarkers Prev* 23: 2208-2217.
42. Foliaki S, Brewer N, Pearce N, Snijders PJ, Meijer CJ, et al. (2014) Prevalence of HPV infection and other risk factors in a Fijian population. *Infect Agent Cancer* 9: 14.
43. Asia-Pacific Working Party on Prevention of Hepatocellular Carcinoma (2010) Prevention of hepatocellular carcinoma in the Asia-Pacific region: Consensus statements. *J Gastroenterol Hepatol* 25: 657-663.
44. Kaanoi M, Braun K, Gotay C (2004) Primary care physicians' knowledge, attitudes and practices related to cancer screening and cancer prevention clinical trials. *Pac Health Dialog* 11: 160-165.
45. Tajima K, Moore M (2002) Programs for Asian Pacific cancer prevention in response to the four strategic directions of UICC for the new millennium. *Asian Pac J Cancer Prev* 3: 263-266.
46. Juon HS, Strong C, Oh TH, Castillo T, Tsai G, et al. (2008) Public health model for prevention of liver cancer among Asian Americans. *J Community Health* 33: 199-205.
47. Tsark JU (2007) Reducing cancer health disparities in the US-associated Pacific. *J Public Health Manag Pract* 13: 49.
48. Wong VS, Kawamoto CT (2010) Understanding cervical cancer prevention and screening in Chuukese women in Hawaii. *Hawaii J Med Public Health* 69: 13.
49. Hubbell F, Luce PH, Afeaki WP, Cruz LAC, Gumataotao T, et al. (2004) Addressing the cancer control needs of Pacific Islanders: Experience of the Pacific Islander Cancer Control Network. *Pac Health Dialog* 11: 233-238.
50. Kagawa SM, Pourat N (2000) Asian American and Pacific Islander breast and cervical carcinoma screening rates and healthy people 2000 objectives. *Cancer* 89: 696-705.
51. Kagawa SM, Breen N, Coughlin S, McLean TA, et al. (2006) Breast and cervical cancer control among Pacific Islander and Southeast Asian Women: Participatory action research strategies for baseline data collection in California. *J Cancer Educ* p: 21.
52. Lee HY, Lundquist M, Ju E, Luo X, Townsend A (2011) Colorectal cancer screening disparities in Asian Americans and Pacific Islanders: Which groups are most vulnerable? *Ethn Health* 16: 501-518.
53. Tanjasiri SP, Tran JH (2008) Community capacity for cancer control collaboration: Weaving an Islander network for cancer awareness, research and training for Pacific Islanders in Southern California. *Cancer Detect Prev* 32: 37-40.
54. Robison SW, Dietrich CS, Person DA, Farley JH (2002) Ethnic differences in survival among Pacific Island patients diagnosed with cervical cancer. *Gynecol Oncol* 84: 303-308.
55. Steele CB, Townsend JS, Tai E, Thomas CC (2014) Physician visits and preventive care among Asian American and Pacific Islander long-term survivors of colorectal cancer, USA, 1996-2006. *J Cancer Surviv* 8: 70-79.
56. Mishra SI, Bastani R, Huang D, Luce PH, Baquet CR (2007) Mammography screening and Pacific Islanders: Role of cultural and psychosocial factors. *J Cancer Educ* 22: 32-36.
57. Wu L, Colby E, Filiaga AS, Maskarinec GG (2010) American Samoan women's health: Experiences and attitudes toward breast and cervical cancer screening. *Hawaii J Med Public Health* 69: 17.
58. Katz AR, Palafox NA, Johnson DB, Yamada S, Ou AC, et al. (2004) Cancer epidemiology in the freely associated US Pacific Island jurisdictions: Challenges and methodologic issues. *Pac Health Dialog* 11: 84-87.
59. Ruidas LU, Adaoag A, Williams VT, Sesepasara ML (2004) Cancer in American Samoa. *Pac Health Dialog* 11: 17-22.
60. Wong V, Taoka S, Kuartei S, Demei Y, Soaladaob F (2004) Cancer in the republic of Palau (Belau). *Pac Health Dialog* 11: 64-69.
61. Kroon E (2004) Cancer in the Republic of the Marshall Islands. *Pac Health Dialog* 11: 70-77.
62. Pobutsky A (2004) Community based participatory approaches to address health disparities in Hawaii: Recent applications in cancer prevention, detection and treatment programs. *Pac Health Dialog* 11: 183-190.
63. Townsend JS, Stormo AR, Roland KB, Lum LB, White S, et al. (2014) Current cervical cancer screening knowledge, awareness, and practices among US affiliated Pacific island providers: Opportunities and challenges. *The oncologist* 19: 383-393.
64. Aitaoto N, Braun KL, Estrella J, Epeluk A, Tsark J (2012) Design and results of a culturally tailored cancer outreach project by and for Micronesian women. *Prev Chronic Dis* 82: 9.
65. Aitaoto N, Tsark JU, Tomiyasu DW, Yamashita BA, Braun K (2009) Strategies to increase breast and cervical cancer screening among Hawaiian, Pacific Islander, and Filipina women in Hawaii. *Hawaii J Med Public Health* 68: 215-222.
66. Nagelhout E (2017) Barriers to colorectal cancer screening in a racially diverse population served by a safety-net clinic. *J Community Health* 42: 1-6.
67. Dang J, Lee J, Tran JH, Singer Mk, Foo MA, et al. (2010) The role of medical interpretation on breast and cervical cancer screening among Asian American and Pacific Islander women. *J Cancer Educ* 25: 253-262.
68. Tanjasiri SP, Singer MK, Nguyen T, Foo MA (2002) Collaborative research as an essential component for addressing cancer disparities among Southeast Asian and Pacific Islander women. *Health Promot Pract* 3: 144-154.
69. Cullerton K, Gallegos D, Ashley E, Do H, Voloschenko A, et al. (2016) Cancer screening education: Can it change knowledge and attitudes among culturally and linguistically diverse communities in Queensland, Australia? *Health Promot J Austr* 27:140-147.