Common Determinant and Prevention Strategies of Cancer in the Pacific Countries: A Systematic Review

Masoud Mohammadnezhad¹*, Nasser Salem Alqahtani², Mosese Salusalu¹, Adam Konrote¹

¹Department of Public Health, Fiji National University, Suva, Fiji
²Department of Clinical Nutrition, Northern Borders University, Arar, Saudi Arabia

Email address: masoud.m@fnu.ac.fj (M. Mohammadnezhad)
*Corresponding author

To cite this article: Masoud Mohammadnezhad, Nasser Salem Alqahtani, Mosese Salusalu, Adam Konrote. Common Determinant and Prevention Strategies of Cancer in the Pacific Countries: A Systematic Review. European Journal of Preventive Medicine. Vol. 5, No. 5, 2017, pp. 51-59. doi: 10.11648/j.ejpm.20170505.11

Received: June 26, 2017; Accepted: July 13, 2017; Published: August 1, 2017

Abstract: Cancer is the second leading cause of death worldwide which accounts for 8.2 million deaths each year. Cancer is also one of the important public health priorities in Pacific. Developing preventive strategies can help people to reduce the burden of this disease. As there is no any systematic review done till now, this syntactic review study is aimed to understand the common determinants of cancer and the preventive strategies in Pacific. This study applied the Cochrane library guideline of conducting systematic review. Five more frequent databases were used to find relevant studies. Using keywords which were developed based on the aim of the study, and also inclusion and exclusion criteria, articles were searched and reviewing the articles was conducted by two independent coders. After removing duplicated studies, three steps ware applied to achieve the final studies. A data extension sheet was developed and the data were analyzed using a descriptive statistical analysis. Overall, 36 studies were included in the study. USA Pacific countries such as Hawaii had highest number of studies (44%) which followed by South Pacific (33.4%) and Asia Pacific (16.6%) countries. Majority of studies (86%) were applied the quantitative design and 14% were used the qualitative design. The common determinants for cancer were categorized into three areas including the services factors, detection and treatment factors, and individual factors. The most common prevention strategies for cancer were improving health care system such as screening, intensive follow up and surveillance, health education and awareness, policy implementation, and immunization. The results of this study highlighted the most common determinants of cancer and the preventive strategies in Pacific. Considering the results of this study, the health specialist in PICs needs to address all these identified common determinants of cancer among cancer patients from the pacific in the past in order to come up with new strategies or prevention for cancer in the future.

Keywords: Determinants, Preventive Strategies, Cancer, Pacific, Systematic Review

1. Introduction

Cancer is the second leading cause of death worldwide which accounts for 8.2 million deaths each year [4]. In 2015, 1.69 million deaths accounted for lung cancer, 788,000 deaths for Liver, 774,000 for colorectal, 754,000 for stomach, and 571, 000 for breast cancer. Cancer represents a tremendous burden on patients, families, and societies worldwide [5]. Cancer burden worldwide expected to continue to increase in the future. In the Pacific countries, Papua New Guinea among all the Pacific islands has the highest numbers of deaths which accounted 546 followed by Fiji 390 [1].

According to WHO cancer has been associated with
certain factors such as tobacco farming and use, dietary patterns, and alcohol consumption [6]. In addition, no access to quality health care, poverty, no health insurance, and culture are some other common determinants of cancer [7].

Despite this certain forms of cancer have been found to be preventable [8]. It was found that between 30% and 50% of cancer deaths could be prevented by avoiding risk factors, including tobacco products, reducing alcohol consumption, maintaining a healthy body weight, exercising regularly and addressing infection-related risk factors [6, 9]. Health promotion activities and strategic plans are the only two ways that will prevent cancer and improve the health of all Pacific Islanders in the future.

To reduce the tremendous burden from happening, it is better to identify the determinants of cancer in order to prevent cancer, promote cancer awareness and control cancer epidemic through-out the whole Pacific countries. This systematic review, regarding the determinants and prevention for cancer is very important, as there has been no review done on this in the Pacific recently, and this will be the first. The purpose of this systematic review is to identify the common determinants for cancer and prevention for cancer in the pacific.

2. Methods

This systematic review was conducted considering the guidelines provided by the Cochrane library using five frequently used databases by similar studies. The most common journals used included MEDLINE, Scopus, EMBASE, WEB of Science Electronic Database, Pubmed, and PsychINFO. To obtain more relevant studies, key words such as “determinants”, “prevent*”, “strategy”, “cancer”, “Pacific”, “treatment” were used and combined using AND/OR to increase the search scope. Studies selected were published from 1st January 2000 to 1st January 2017 and were written in the English Language. Non English studies and those which did not fit the description of the key words were excluded.

Two independent reviewers scanned the titles of all selected studies and duplicated studies were omitted using the End Note software. Following this the reviewers analyzed the abstract sections of the studies and irrelevant studies were omitted. The remaining studies texts were then fully reviewed and any studies which were deemed irrelevant to the topic were removed (Figure 1). Thirty three studies were selected after reviewing the full text of the studies. The reviewers then went through the bibliography sections of the selected studies to obtain other relevant studies (3 studies). Finally 36 studies were included in the study.

Using the remaining studies a data extraction sheet was formulated (Table 4) which included the study information, population, methods and study results. Using the extraction sheet a descriptive analysis was made and the frequency and percentages of the results were reported.

3. Results

3.1. General Information of the Studies

As table 1, shows majority of studies (58.4%) were conducted between 2010 to 2016. USA Pacific countries such as Hawaii had highest number of studies (44%) which followed by South Pacific (33.4%) and Asia Pacific (16.6%) countries. While majority of studies did not report the age of participants, adults and older people (33.4%) were the most frequent age group which the studies were conducted among them. Half of studies did not report the gender of participants and 33.4% of studies were conducted among both male and female.

![Figure 1. Article selection process.](image-url)
studies did not report the sampling method, but random sampling was the most frequent sampling method (8%). Amongst the studies that used quantitative study design, 36.1% used questionnaire for collecting the data while all of the qualitative studies (8.3%) applied focus group and in-depth method for collecting the data (Table 2).

Table 2. Methodological characteristics of studies.

| Factor                        | Frequency | Percentage |
|-------------------------------|-----------|------------|
| Type of the studies           |           |            |
| Quantitative                  | 33        | 86         |
| Qualitative                   | 3         | 14         |
| Sampling method               |           |            |
| Random                        | 3         | 8          |
| Convenience                   | 1         | 3          |
| Purposive                     | 1         | 3          |
| Snowball                      | 1         | 3          |
| Not Stated                    | 30        | 83         |
| Data collection tool          |           |            |
| Questionnaire                 | 13        | 36.1       |
| Focus Group & In-depth Interview | 3       | 8.3        |
| Not stated                    | 20        | 55.6       |

However 41.6% of studies did not mentioned the place of the studies, 25% of studies were conducted in community which followed by hospital based studies (13.8%), health care based studies (11.2%), and school based studies (8.4%) (Figure 2).

3.2. Determinant of Cancer

Table 3 shows the common determinants for cancer in the Pacific region. Out of the 36 studies, 26 studies (72%) listed the determinants of cancer. The common determinants for cancer were categorized into three areas including the services factors (11 studies), detection and treatment factors (8 studies), and individual factors (7 studies).

Unhealthy foods and dietary habits (13.8%) and limited health education and awareness (5.6%) were highlighted in the individual related factors of cancer.

Table 3. Determinant of Cancer.

| Determinants                                      | Frequency | Percentage |
|--------------------------------------------------|-----------|------------|
| Detection and Treatment Factors                   |           |            |
| Unavailability of cancer detecting method         | 7         | 19.5       |
| Inadequate Treatment                              | 1         | 2.78       |
| Service Factors                                   |           |            |
| Lack of insurances                                | 3         | 8.33       |
| Cost of services                                  | 2         | 5.6        |
| Low income                                       | 4         | 11.1       |
| Lack of accessibility (geographical location)     | 2         | 5.6        |
| Individual Factors                                |           |            |
| Limited health education & awareness              | 2         | 5.6        |
| Unhealthy foods or dietary habits                 | 5         | 13.8       |

3.3. Prevention of Cancer

Based on the prevention for cancer alone, 22 studies stated the most common prevention for cancer which focus on improving health care system (10 studies) such as screening, intensive follow up and surveillance, health education and awareness (8 studies), policy implementation (5 studies), and immunization (3 studies) as the least common prevention for cancer. Some factors listed above were mentioned in multiple studies.

4. Discussion

The aim of this study is to identify the common determinants and prevention for cancer in the Pacific in order to suggest some health promotion strategies that will improve and prevent cancer among pacific people in the future. The results show that available treatment, affordable services, and knowledge are the most common determinants of cancer in the Pacific countries. In addition, the results shows that the most common determinant of cancer included poor cancer detecting methods such as screening, mammography, and bone densitometry, unhealthy foods or dietary habits, and patients also received treatment based on their status. This was followed by type of affordable services and available services relating to cancer such as life insurance, cost of services, low salary, poverty and location. The least common determinants of cancer found by this study involved the limited knowledge about cancer in the Pacific.

Moreover it was found that 70% of deaths from cancer occur in low and middle income countries such as Pacific Islands Countries (PICs) [10]. There are numerous reasons as to why cancer deaths are higher in lower and middle income countries such as PICs but a majority appear to be due to the unavailability of services and as previously stated the lack of knowledge regarding the topic. Pacific islanders are regularly exposed to the risk factors for cancer, yet treatment and services are not available, accessible or even affordable for the individuals residing in the region [11]. In addition, developing countries have limited resources allocated toward prevention of cancer and treatment of cancer [12]. In PICs,
cancer patients received better treatment and services when referred to the US and the other developed countries when compared to the patients receiving treatment and services within their own PICs [13].

The next determinant found by this study was that of poor knowledge. The total number of reviewed articles that measured Pacific islander’s knowledge about cancer alone accounted for 2 articles out 36. Knowledge about cancer in the Pacific is the least common determinant in the Pacific yet it is one of the key strategies for cancer prevention [14]. Limited knowledge about cancer reduces the possibility of early detection. This in the long run can result in patients seeking advice at stages where the cancer is no longer treatable.

In addition to this poor communication between health specialists in the Pacific can result in poor knowledge among the population about the prevention of cancer [15]. In regards to the study participants in two of the analysed articles stated that if prior information about the cancer had been available patients would have been more likely to attempt to change their lifestyles and behaviour in an attempt to prevent the outcome [16]. Hence in order to improve and prevent cancer in the Pacific, good communication between health specialists and citizens should be prioritized and considered as a way for improving health and cancer prevention in the Pacific. This communication will be essential in the process of health promotion.

The next common determinant of cancer among pacific people was the availability and affordability of services including insurance policies. In a study conducted it was found that cancer patients from the Pacific island countries who have access to better health care services in the United States received cancer services based on their insurance status [17]. In regards to insurance status, people with insurance received good services and good treatment compared to those who did not have insurance [18]. Cost of cancer surgeries or services can vary depending on the types of services provided for them but cost of surgeries alone in cancer patients is very expensive [19]. Poverty is also one of the common determinants of cancer services in the Pacific. Pacific islands are categorized as middle and low income countries which show that poverty is evident in the pacific. According to LM Baldwin people living in rural areas appeared to receive less services when compared to those living in urban areas [11]. This shows that the types of services provided in the rural areas varies when compared to the services provided in the urban areas.

Furthermore another major issue identified was the poor screening and case identification methods present in the Pacific. Cancer detecting methods such as screening, mammography, cholesterol screening, and bone densitometry done among Pacific islanders are key tests for identifying various cancers. According to V Wong (2004), early cancer detecting methods similar to these are not accessible or available in certain places in the Pacific [20]. This shows that there is a large gap in the early detection stages and if targeted correctly can be beneficial to the treatment of cancer in the Pacific. Hence early detection is a necessary step to reducing the prevalence of cancer.

Lastly the most common prevention for cancer in the Pacific included immunization (HPV vaccines & screening test followed by surveillance), health education or awareness, policy implementation, and improving health care system. According to the WHO, “between 30-50% of cancer can currently be prevented by avoiding risk factors and implementing existing evidence-based prevention strategies [1]. One way to address this issue is to by adapting some of the health promotion strategies such as PEN model in society in order to provide health services includes cancer and all types of services to the people of the Pacific living in rural areas and urban areas [21].

The study set out to investigate literature ranging from the year 2000 to 2017 in the hopes of strengthening the results and providing scope. However key limitations in this study were the absence of non-English literature and the omission of grey literature.

5. Conclusion

The results of this study show that cancer patients in the Pacific have limited knowledge about cancer. This also revealed however that services and treatment toward cancer are indeed available, accessible, and affordable in some areas in the Pacific. However for the countries where the services were not readily available, outside treatment appeared to be the most common source of treatment and cancer related services. Hence in order to improve the health and prevent cancer among pacific people, health specialist in PICs needs to address all these identified common determinants of cancer among cancer patients from the pacific in the past in order to come up with new strategies or prevention for cancer in the future.

| Study Information | Population | Methodology | Results |
|-------------------|------------|-------------|---------|
| Age Group: 41-50 yrs. | # Of Male: 93 | Place: Hospital | Prevention |
| Country: Hawaii | # Of Female: 144 | Sampling Method: Not Stated | To improving the health care systems in both the Pacific Islands and in Hawai’i. |
| Type Of Study: Descriptive study | Age Group: 41-50 yrs. | Data collection tools: Interview | The implementation or existence of a national comprehensive cancer control strategic plan would facilitate greater identification, prevention, |
| Untalan et al [22] | Population: Total 195 | Place: Hospital | |
| Year: 2004 | # Of Male: 116 | Sampling Method: Random | |
| Type Of Study: Descriptive study (cross-sectional) | # Of Female: 79 | Data collection tools: Not Stated | |
| Country: Hawaii | Age group: Ranges from 0-19 yrs. | Place: Hospital | |
| Ou et al [23] | Population: 237 Cases | Sampling Method: Not Stated | |
| Year: 2004 | # Of Male: 93 | Data collection tools: Interview | |
| Type Of Study: Descriptive study | # Of Female: 144 | Place: Hospital | |
| | Age Group: 41-50 yrs. | Sampling Method: Not Stated | |

Table 4. Data Extraction Sheet.
| Study Information | Population | Methodology | Results |
|-------------------|------------|-------------|---------|
| **Country: Kiribati** | | | |
| Ou et al [24] | Population: 124 # Of Male: 46 | Place: Hospital | Prevention |
| Year: 2004 | # Of Female: 78 Age Group: Ranges from 10-86 yrs. | Sampling Method: Not stated Data collection tools: Not stated | A national comprehensive cancer control strategic plan and the implementation of that plan would facilitate greater prevention, treatment and control of cancer. |
| **Country: Nauru** | | | |
| Beltran et al [25] | Population: 192 # Males: 71 # Females: 121 | Place: Not Stated | Determinant |
| Year: 2016 | Age Group: Male 19-62 yrs Females age ranges from 18-50 yrs. | Sampling Method: Snowball Data collection tools: Survey & Interviews | Gender |
| **Country: America** | | | |
| Thompson et al [26] | Population: 800,000 # Male: 9363 # Female: 62543 | Place: Not Stated | Determinant |
| Year: 2014 | Age Group: Men: ranges from 50-75 years Women ranges from 21-75 years | Sampling Method: Not Stated Data collection tools: Not stated | Ethnicity |
| **Country: Fiji** | | | |
| Ka'anoi et al [28] | Population: 454 # Male: Not stated # Female: Not stated Age Group: Not stated | Place: Health Care | Prevention |
| Year: 2004 | | Sampling Method: Not Stated Data collection tools: Questionnaire | Language and gender concordant primary care providers and culturally tailored online health resources may help improve prevention cancer screening in Asian Populations. |
| **Country: America** | | | |
| Foliaki et al [27] | Population: 1261 Cases # Male: | Place: Health Sub district (Health care) | Prevention |
| Year: 2014 | # Female: 1261 Age Group: Age ranges 16-64 yrs. | Sampling Method: Not Stated Data collection tools: Not stated | An on-going active education campaign |
| **Country: Fiji** | | | |
| Juon et al [29] | Population: 1775 # Male: 619 # Female: Not stated Age Group: Age ranges 16-64 yrs. | Place: Churches & community | Prevention |
| Year: 2008 | | Sampling Method: Not Stated Data collection tools: Survey | Develop and implement culturally tailored educational campaign |
| **Country: Pacific Regions** | | | |
| Garland et al [30] | Population: 333258 # Male: Not Stated # Female: Not stated Age Group: Not stated | Place: Not Stated | Prevention |
| Year: 2008 | | Sampling Method: Not Stated Data collection tools: Not stated | Introduction of HPV Vaccine |
| **Country: New Zealand** | | | |
| Chelmolo and Elwood [32] | Population: 6820 # Male: 2050 # Female: 4770 Age Group: Not stated | Place: Health care centres | Prevention |
| Year: 2015 | | Sampling Method: Not Stated Data collection tools: Not stated | Health Educating the Population about range of sexual health issues, safe sex, good eating behaviours, smoking. |
| **Country: New Zealand** | | | |
| Lee et al. [33] | Population: 33787 Cases | Place: Community | Determinant |
| Year: 2004 | | Sampling Method: Not stated Data collection tools: Survey | Effect of Vitamin D on Ovarian risk |
| **Countries: 175 countries world wide** | | | |
| Type Of Study: Descriptive Countries: 175 countries world wide | Population: 175 countries #Male: Not stated # Female: Not stated Age Group: Not stated | Place: Not Stated | Determinant |
| Year: 2006 | | Sampling Method: Not Stated Data collection tools: Not stated | Oral contraceptive used |
| **Country: New Zealand** | | | |
| Type Of Study: Descriptive | Population: 6820 # Male: 2050 # Female: 4770 Age Group: Not stated | Place: Health care centres | Determinant |
| Country: New Zealand | | Sampling Method: Not Stated Data collection tools: Not stated | Age |
| Year: 2015 | | | Gender |
| **Country: New Zealand** | | | |
| Type Of Study: Descriptive | Population: 33787 Cases # Male: | Place: Community | Prevention |
| Country: New Zealand | # Female: Not stated Age Group: Not stated | Sampling Method: Not stated Data collection tools: Survey | |
| Study Information | Population | Methodology | Results |
|-------------------|------------|-------------|---------|
| **Year: 2000** | # Male: 30176 | Sampling Method: Not Stated | Intense follow-up surveillance to the estimated risk in each individual case. |
| **Type Of study: Descriptive** | # Female: 3611 | Data collection tools: Not stated | Prevention |
| **Country: Taiwan** | Age Group: 20-98 years | | Family first: role modelling beginning at the personal and family level. |
| **Jongudomkarn et al [34]** | Population: 45 participant | Place: Community | Local leverage: using village community forums to reduce alcohol drinking. |
| **Year: 2015** | # Male: 14 | Sampling method: not stated | Gentle growth: making the first step and treading gently, |
| **Type Of Study: Qualitative Cross-sectional (Focus Group)** | # Female: 31 | Data collection tools: Focus group & interview | Respect, Redemption, and Rehabilitation: valuing the person to re-integrate them in the village society. |
| **Country: Thailand** | Age Group: 32-70 | | Prevention |
| **Arbyn et al [35]** | Population: 182 Countries | Place: Not stated | New effective preventive strategies. |
| **Year: 2011** | # Male: Not stated | Sampling Method: Not stated | Surveillance, including high-quality cancer registries, linked to screening and vaccination registries is essential to track the impact of these prevention strategies and to |
| **Type Of Study: Descriptive** | # Female: Not stated | Data collection tools: Not stated | Provide the foundation for advocacy, national policy and global action. |
| **Country: Worldwide 182 countries** | Age Group: Not stated | | |
| **Hubbell et al [36]** | Population: 797670 | Place: Community, School, & Health care centre | Prevention |
| **Year: 2004** | # Male: Not stated | Sampling Method: Not Stated | PICCN is advancing the national goal of eliminating cancer-related health disparities through its cancer awareness and research activities for Pacific Islanders. |
| **Type Of Study: Descriptive study** | # Female: Not stated | Data collection tools: Not stated | | |
| **Country: America** | Age Group: Not stated | | |
| **Brindel et al [37]** | Population: 359 | Place: Not stated | Prevention |
| **Year: 2009** | # Male: 44 | Sampling method: Not stated | Recreational physically activities are recommended for obese people. |
| **Type Of Study: Case-Control study** | # Female: 315 | Data collection tools: Not stated | | |
| **Country: French Polynesia** | Age Group: 18 | | |
| **Kagawa-Singer and Pourat [38]** | Population: 66952 | Place: Community | Determinant |
| **Year: 2000** | -2756 Non-Hispanic women | Sampling Method: Not stated | Poverty |
| **Type Of Study: Cross-sectional** | -64196 Non-Hispanic white women | Data collection tools: Not stated | Prevention |
| **Country: America** | # Male: Not stated | | Increase cancer screening |
| **Kagawa-Singer et al [39]** | # Female: 66952 | Place: Community & school | Determinant |
| **Year: 2006** | Age Group: above 18 yrs | Sampling Method: Not stated | Belief |
| **Type Of Study: Qualitative (Focus Group)** | Population: 173 | Data collection tools: Not stated | Causes of breast cancer: getting hit on the breast, having too many children, breast fondling, and bad circulatory systems poor hygiene, |
| **Country: America** | # Male: 84 | | having too many children, |
| **Coughlin and Uhler [40]** | # Female: 89 | Place: Community & school | having husbands who have sex outside of marriage |
| **Year: 2000** | Age Group: Not Stated | Sampling Method: Random & clustering | using birth control |
| **Type Of Study: Cross-sectional (Qualitative)** | Population: 6048 Asian and pacific island Women | Data collection tools: Survey & Interview | Prevention |
| **Country: America** | # Male: Not stated | Place: Not Stated | Community Education |
| **Shin et al [17]** | # Female: 6048 | Sampling Method: Not stated | Community training |
| **Year: 2012** | Age Group: 50 yrs + | Data collection tools: Not stated | Train health care providers to improve access to screening |
| **Type Of Study: Case Study** | Population: 1526778 | Place: Community & school | Set up mobile screening in the community during annual celebration. |
| **Country: Asia Pacific Region** | # Male: 471289 | Sampling Method: Not stated | Policy advocacy |
| | # Female: 1055489 | Data collection tools: Not stated | Increase access to screening |
| | Age Group: Not stated | Place: Community & school | Prevention |
| | | Sampling Method: Random & clustering | Continued efforts to ensure that Asian and Pacific Islander women who are medically underserved, including those without health insurance, have access to cancer screening services. |

**Note:** Data collection tools include surveys, interviews, focus group discussions, and other methods as indicated in the study descriptions.
| Study Information | Population | Methodology | Results |
|-------------------|------------|-------------|---------|
| Meredith et al [41]  | Population: Not stated | Place: Not Stated | Manage cancer specifically in low- and middle-income countries. |
| Year: 2012 | # Male: Not stated | Sampling Method: Not stated | Prevention |
| Type Of Study: Descriptive | # Female: Not stated | Data collection tools: Not stated | Continued efforts are needed to reduce infectious disease and improve screening program uptake among Pacific people. |
| Country: New-Zealand | Age Group: 22-65 yrs. | Place: Not stated | Determinant |
| Sneyd and Cox [42] | Population: 14802 | Sampling method: Not stated | Age |
| Year: 2011 | # Male: 5935 | Data collection tools: Not stated | Ethnicity |
| Type Of Study: Descriptive | # Female: 8867 | Place: Community | |
| Country: New Zealand | Age Group: 40-80 yrs. | Sampling Method: random | Determinant |
| Lee et al [43] | Population: 52491 | Data collection tools: Interview & survey | Ethnicity |
| Year: 2011 | # Male: Not Stated | Place: Community & school | |
| Type Of Study: Descriptive | # Female: Not Stated | Sampling Method: Not stated | |
| Country: America | Age Group: 50 yrs. | Data collection tools: Not stated | |
| Tansjasi and Tran [44] | Population: 133 | Place: U. S military health care | |
| Year: 2008 | # Male: 79 | Sampling method: Not stated | Determinant |
| Type Of Study: Descriptive | # Female: | Data collection tools: Not stated | |
| Country: Hawaii | Age Group: 49 pacific ethnicity | Place: Not stated | Ethnicity |
| Wong and Kawamoto [45] | Population: 153 | Sampling Method: Not stated | |
| Year: 2010 | # Male: | Data collection tools: Not stated | |
| Type Of Study: descriptive | # Female: | Place: Not stated | |
| Country: Hawaii | Age Group: 43 Maori | Sampling Method: Not stated | |
| Biggar et al [46] | Population: 133 | Data collection tools: Interviews & survey | |
| Year: 2011 | # Male: 79 | Place: Not stated | Determinant |
| Type Of Study: Retrospective case | # Female: Not stated | Sampling Method: Not stated | |
| Country: New Zealand | Age Group: Not stated | Data collection tools: Not stated | |
| Robison et al [47] | Population: Not Stated | Place: Not stated | Determinant |
| Year: 2002 | # Men: Not Stated | Sampling Method: not stated | Influenza vaccine |
| Type Of Study: Descriptive | #Female: Not Stated | Data collection tools: Not stated | Cholesterol screening |
| Country: United State | Age Group: Not Stated | Place: Not stated | Bone densitometry |
| #29 Shin et al [48] | Population: Not Stated | Sampling Method: not stated | Mammography |
| Year: 2015 | # Men: Not Stated | Data collection tools: Not stated | Number of physicians visits of patients for check-up. |
| Type Of Study: Descriptive | #Female: Not Stated | Place: Community | Prevention |
| study | Age Group: Not Stated | Sampling Method: Not stated | Immunization |
| Country: Western Pacific Regions | | Data collection tools: Not stated | Screening via Visual Inspection with acetic acid (VIA) or Pap smear |
| #30 Steele et al [49] | Population: 294843 | Place: Not stated | Intervention |
| Year: 2014 | # Men: 4500 | Sampling Method: Not stated | Medication |
| Type Of Study: Qualitative | #Female: 4167 | Data collection tools: Not stated | use human papilloma virus tests to screen women |
| study (Cross-sectional) – (Surveillance) | Age Group: 60 + | Place: Not stated | Monitoring |
| Country: United State | | Sampling Method: Not stated | Appropriate follow-up for abnormal results. |
| #31 Meredith et al [50] | Population: Not Stated | Data collection tools: Not stated | Determinant |
| Year: 2012 | # Men: Not Stated | Place: Not stated | Influenza vaccine |
| Type Of Study: Descriptive | #Female: Not Stated | Sampling Method: Not stated | Cholesterol screening |
| studies | Age Group: Not Stated | Data collection tools: Not stated | Bone densitometry |
| Country: New Zealand | | Place: Not stated | Mammography |
| #32 Blair et al [51] | Population: Not Stated | Sampling Method: Not stated | Number of physicians visits |
| Study Information                  | Population          | Methodology                             | Results                |
|-----------------------------------|---------------------|-----------------------------------------|------------------------|
| Wu et al [52]                     | Total: 55           | Place: Communities                      | Determinant            |
| Year: 2010                        | Male:               | Sampling Method: Purposive              | Cost of services       |
| Type: Cohort Study                | Female: 55          | Data collection tools: Focus groups     | Participants received  |
| Country: American Samoa           | Age: 19 & older     |                                          | treatment from the     |
| Pobutschy et al [53]              | Total: not Stated   | Place: Communities                      | Determinants            |
| Year: 2004                        | Male: not stated    | Sampling Method: Not stated              | No insurance           |
| Study: Cohort                     | Female: not stated  | Data collection tools: Land based       | Low income             |
| Country: Hawaii (U. S)            | Age: not stated     | telephone survey                        | Low education          |
| Terada et al [54]                 | Total: 301          | Place: Hospital                         | Determinant            |
| Year: 2016                        | Male: not stated    | Sampling Method: Not stated              | No Insurance           |
| Study: Cohort                     | Female: Not Stated  | Data collection tools: Not stated        |                        |
| Country: Hawaii                   | Age: 53.6 ± 10.0    |                                          |                        |

References

[1] WHO, Fact sheet No. 297: cancer. WHO Media Centre Fact Sheets, 2006.

[2] Farlex, The Free Dictionary by Farlex. Insolvency risk, retrieved on, 2015. 27.

[3] Stewart, B. W. and P. Kleihues, World cancer report. Vol. 57. 2003: IARC press Lyon.

[4] Well, E., et al., International childhood cancer day. Cancer Nursing Practice. 3 (1).

[5] Kuele, V., et al., Cytotoxicity of the methanol extracts of Elephantopus mollis, Kalanchee crenata and 4 other Cameroonian medicinal plants towards human carcinoma cells. BMC Complementary and Alternative Medicine, 2017. 17 (1): p. 280.

[6] Wang, J. M., et al., Diet habit, alcohol drinking, tobacco smoking, green tea drinking, and the risk of esophageal squamous cell carcinoma in the Chinese population. European journal of gastroenterology & hepatology, 2007. 19 (2): p. 171-176.

[7] Freeman, H. P., Poverty, culture, and social injustice: determinants of cancer disparities. CA: A Cancer Journal for Clinicians, 2004. 54 (2): p. 72-77.

[8] Friedenreich, C. M., Physical activity and cancer prevention: from observational to intervention research. Cancer epidemiology, biomarkers & prevention: a publication of the American Association for Cancer Research, cosponsored by the American Society of Preventive Oncology, 2001. 10 (4): p. 287-301.

[9] Liu, J.-R., et al., Fresh apples suppress mammary carcinogenesis and proliferative activity and induce apoptosis in mammary tumors of the Sprague–Dawley rat. Journal of agricultural and food chemistry, 2008. 57 (1): p. 297-304.

[10] Gulland, A., Global cancer prevalence is growing at "alarming pace," says WHO. BMJ: British Medical Journal, 2014. 348.

[11] Baldwin, L. M., et al., Access to cancer services for rural colorectal cancer patients. The Journal of Rural Health, 2008. 24 (4): p. 390-399.

[12] Ganz, P. A., et al., Supportive care after curative treatment for breast cancer (survivorship care): resource allocations in low-and middle-income countries. A Breast Health Global Initiative 2013 consensus statement. The Breast, 2013. 22 (5): p. 606-615.

[13] Tsark, J. U., Reducing cancer health disparities in the US-associated Pacific. Journal of public health management and practice: JPHMP, 2007. 13 (1): p. 49.

[14] Yoo, K.-Y., Cancer prevention in the Asia Pacific region. Asian Pac J Cancer Prev, 2010. 11 (4): p. 839-44.

[15] Thorne, S. E., B. D. Bultz, and W. F. Baile, Is there a cost to poor communication in cancer care?: a critical review of the literature. Psycho-oncology, 2005. 14 (10): p. 875-884.

[16] Tajima, K. and M. Moore, Programs for Asian Pacific cancer prevention in response to the four strategic directions of UICC for the new millennium. Asian Pacific J Cancer Prev, 2002. 3: p. 263-6.

[17] Shin, H.-R., M. C. Carlos, and C. Varghese, Cancer control in the Asia Pacific region: current status and concerns. Japanese journal of clinical oncology, 2012: p. hys077.

[18] Ayanian, J. Z., et al., The relation between health insurance coverage and clinical outcomes among women with breast cancer. New England Journal of Medicine, 1993. 329 (5): p. 326-331.

[19] Meropol, N. J. and K. A. Schulman, Cost of care cancer: issues and implications. Journal of Clinical Oncology, 2007. 25 (2): p. 180-186.

[20] Wong, V., et al., Cancer in the republic of Palau (Belau). Pac Health Dialog, 2004. 11 (2): p. 64-69.

[21] Scarinci, I. C., et al., Development of a theory-based (PEN-3 and health belief model), culturally relevant intervention on cervical cancer prevention among Latina immigrants using intervention mapping. Health Promotion Practice, 2012. 13 (1): p. 29-40.

[22] Untalan, F., et al., Disparities in outcomes for pediatric cancer patients treated in Hawai‘i: comparing Hawai‘i residents to children referred from the Pacific Islands. Pacific health dialog: a publication of the Pacific Basin Officers Training Program and the Fiji School of Medicine, 2004. 11 (2): p. 114-119.

[23] Ou, A. C., et al., Epidemiology of cancer in the Republic of Kiribati. Pacific health dialog, 2004. 11 (2): p. 88-93.

[24] Ou, A. C., et al., Epidemiology of cancer in the Republic of Nauru. Pacific health dialog, 2004. 11 (2): p. 101-106.
[25] Beltran, R., et al., HPV Literacy and Associated Factors Among Hmong American Immigrants: Implications for Reducing Cervical Cancer Disparity. Journal of community health, 2016. 41 (3): p. 603-611.

[26] Thompson, C. A., et al., Patient and provider characteristics associated with colorectal, breast, and cervical cancer screening among Asian Americans. 2014, AACR.

[27] Foliaki, S., et al., Prevalence of HPV infection and other risk factors in a Fijian population. Infectious agents and cancer, 2014. 9 (1): p. 14.

[28] Ka‘ano‘i, M., K. Braun, and C. Gotay, Primary care physicians’ knowledge, attitudes and practices related to cancer screening and cancer prevention clinical trials. Pacific health dialog, 2004. 11 (2): p. 160-165.

[29] Juon, H.-S., et al., Public health model for prevention of liver cancer among Asian Americans. Journal of community health, 2008. 33 (4): p. 199-205.

[30] Garland, S. M., et al., Recommendations for cervical cancer prevention in Asia Pacific. Vaccine, 2008. 26: p. M89-M98.

[31] Garland, C. F., et al., Role of ultraviolet B irradiance and vitamin D in prevention of ovarian cancer. American journal of preventive medicine, 2006. 31 (6): p. 512-514.

[32] Chelimo, C. and J. M. Elwood, Sociodemographic differences in the incidence of oropharyngeal and oral cavity squamous cell cancers in New Zealand. Australian and New Zealand journal of public health, 2015. 39 (2): p. 162-167.

[33] Lee, K.-D., et al., The incidence and risk of developing a second primary esophageal cancer in patients with oral and pharyngeal carcinoma: a population-based study in Taiwan over a 25 year period. BMC cancer, 2009. 9 (1): p. 373.

[34] Jongudomkarn, D., P. Singhawara, and C. Macduff, Village voices: lessons about processes for disease prevention from a qualitative study of family health leaders in a community in northeastern Thailand. Asian Pacific journal of cancer detection and prevention, 2015. 16 (10): p. 4401-4408.

[35] Arbyn, M., et al., Worldwide burden of cervical cancer in 2008. Annals of oncology, 2011. 22 (12): p. 2675-2686.

[36] Hubbell, F., et al., Addressing the cancer control needs of Pacific Islanders: experience of the Pacific Islander Cancer Control Network. Pacific health dialog, 2004. 11 (2): p. 233-238.

[37] Brindel, P., et al., Anthropometric factors in differentiated thyroid cancer in French Polynesia: a case–control study. Cancer Causes & Control, 2009. 20 (5): p. 581-590.

[38] Kagawa-Singer, M. and N. Pourat, Asian American and Pacific Islander breast and cervical carcinoma screening rates and healthy people 2000 objectives. Cancer, 2000. 89 (3): p. 696-705.

[39] Kagawa-Singer, M., et al., Breast and cervical cancer control among Pacific Islander and Southeast Asian Women: participatory action research strategies for baseline data collection in California. Journal of Cancer Education, 2006. 21.

[40] Coughlin, S. S. and R. J. Uhler, Breast and cervical cancer screening practices among Asian and Pacific Islander women in the United States, 1994–1997. Cancer Epidemiology and Prevention Biomarkers, 2000. 9 (6): p. 597-603.

[41] Meredith, I., et al., Cancer in Pacific people in New Zealand. Cancer Causes & Control, 2012. 23 (7): p. 1173-1184.

[42] Sneyd, M. J. and B. Cox, Clinical and histologic factors associated with melanoma thickness in New Zealand Europeans, Maori, and Pacific peoples. Cancer, 2011. 117 (11): p. 2489-2498.

[43] Lee, H. Y., et al., Colorectal cancer screening disparities in Asian Americans and Pacific Islanders: which groups are most vulnerable? Ethnicity & health, 2011. 16 (6): p. 501-518.

[44] Tanjasiiri, S. P. and J. H. Tran, Community capacity for cancer control collaboration: weaving an Islander network for cancer awareness, research and training for Pacific Islanders in Southern California. Cancer detection and prevention, 2008. 32 (1): p. 57-40.

[45] Wong, V. S. and C. T. Kawamoto, Understanding cervical cancer prevention and screening in Chuukese women in Hawaii. Hawaii Med J, 2010. 69 (6 Suppl 3): p. 13-16.

[46] Biggar, M., et al., Gastric cancer location and histological subtype in Pacific people and Maori defies international trends. The New Zealand Medical Journal (Online), 2011. 124 (1331).

[47] Robison, S. W., et al., Ethnic differences in survival among Pacific Island patients diagnosed with cervical cancer: Gynecologic oncology, 2002. 84 (2): p. 303-308.

[48] Shin, H.-R., et al., Prevention of infection-related cancers in the WHO Western Pacific Region. Japanese journal of clinical oncology, 2015. p. hyv092.

[49] Steele, C. B., et al., Physician visits and preventive care among Asian American and Pacific Islander long-term survivors of colorectal cancer, USA, 1996–2006. Journal of Cancer Survivorship, 2014. 8 (1): p. 70-79.

[50] Meredith, I., et al., High rates of endometrial cancer among Pacific women in New Zealand: the role of diabetes, physical inactivity, and obesity. Cancer Causes & Control, 2012. 23 (6): p. 875-885.

[51] Blair, V., A. Kahokehr, and T. Sammour, Cancer in Māori: lessons from prostate, colorectal and gastric cancer and progress in hereditary stomach cancer in New Zealand. ANZ journal of surgery, 2013. 83 (1-2): p. 42-48.

[52] Wu, L., et al., American Samoan women's health: experiences and attitudes toward breast and cervical cancer screening. Hawaii medical journal, 2010. 69 (6 Suppl 3): p. 17.

[53] Pobutsky, A., et al., Community based participatory approaches to address health disparities in Hawai‘i: recent applications in cancer prevention, detection and treatment programs. Pacific health dialog, 2004. 11 (2): p. 183-190.

[54] Terada, K., et al., Health Disparities in Native Hawaiians and Other Pacific Islanders Following Hysterectomy for Endometrial Cancer. Hawai‘i Journal of Medicine & Public Health, 2016. 75 (5): p. 137.