



## Barriers and enablers for cervical cancer screening in the Pacific: A systematic review of the literature.

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### ABSTRACT:

**Background:** Globally cervical cancer is the fourth most common type of cancer in women and in some low-income countries is the most common cancer in women. Papua New Guinea has a particularly concerning incidence of cervical cancer where it ranks first as the leading cause of cancer in females. Screening is a reliable strategy to detect cervical cancer but implementation of screening in Papua New Guinea is poor. The aim of this review is to identify the enablers and barriers for cervical cancer screening in Papua New Guinea.

**Methods:** A systematic search of peer-reviewed literature was conducted using electronic databases; PubMed, Medline, Scopus, CINAHL and Google Scholar. Articles published between 2007 and 2017 that focused on the enablers and barriers to cervical cancer screening were included. Only one study from Papua New Guinea was identified so the search was extended to include other Pacific Island Countries and Low-Income Countries more broadly.

**Findings:** Twenty articles met the inclusion criteria. The main barriers for cervical cancer screening included a lack of women's knowledge about cervical cancer and screening, a lack of health facilities for screening, diagnosis and treatment, lack of health care worker knowledge and training, cultural beliefs and financial burdens. The main enablers included women having access to education programs, availability of cervical cancer screening services, female friendly environments and health care workers being trained to undertake screening.

**Conclusions:** While the literature highlighted the importance of cervical cancer screening, a range of barriers limits the delivery of this service in low-income country settings. In particular, there is a gap in the knowledge of barriers and enablers within Papua New Guinea and further research in this country is required. Applying the knowledge learned from other low-income countries and gaining a clearer understanding of both the barriers and enablers for cervical cancer screening in the Papua New Guinea context may lead to clear recommendations to improve implementation and uptake of cervical cancer screening.

**Key words:** Barriers and enablers, cervical cancer screening, Pacific Island countries, low-income countries

### BACKGROUND

Cervical cancer is the transformation of normal cervical cells into cancerous cells in the lining of the cervix.<sup>1</sup> Globally, cervical cancer is the fourth most common type of cancer in women and in some low-income countries it is the most common cancer in women.<sup>2</sup> The highest incidence and mortality rates of cervical cancer are in Sub Saharan Africa, South America, South Central Asia and the Pacific.<sup>3</sup> A systematic review of cervical cancer incidence and mortality in the Pacific region (including countries in Polynesia,

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Micronesia and Melanesia) showed the age standardised incidence rate of cervical cancer ranged from 8.2 to 50.7 and the age standardised mortality rates ranged from 2.7 to 23.98 per 100 000 women per year.<sup>4</sup> In the Pacific, in 2010 it was the eighth leading cause of death among women.<sup>4</sup> Low-income countries account for more than 85% of the global burden of cervical cancer and include countries such as Papua New Guinea (PNG). Papua New Guinea has a particularly concerning incidence of cervical cancer where it ranks first as the leading cause of cancer in females.<sup>3</sup> In 2008, the age standardised incidence rate was reported to be 23.3 per 100 000 with a mortality rate of 17.6 which equated to 364 deaths in total.<sup>3</sup> Approximately 938 new cervical cancer are diagnosed each year.

The Centres for Disease Control and Prevention state that approximately 93% of cervical cancer cases could be prevented through screening and human papillomavirus vaccinations.<sup>5</sup> The Pap smear test (Papanicolaou test) is the recommended primary screening test for cervical cancer.<sup>6</sup> In Australia, the Royal Australian College of General Practitioners recommends all women aged 18-20 (or two years after commencing sexual intercourse), have a pap smear test every two years until they are 70 (if the previous two tests have been normal).<sup>7</sup> This has changed from December 2017 when women will be recommended to have a Human Papilloma Virus (HPV) test every five years from age 25 (or two years after first having sexual intercourse, continuing to age 70-74 years).<sup>7</sup>

In PNG, the National Sexual and Reproductive Health Policy, October 2013, has a clear statement that early detection and management of cancer of the reproductive system be encouraged and promoted.<sup>8</sup> Despite the emphasis on the promotion of early screening as detection for cervical cancer, the implementation of the policy remains poor.<sup>8</sup> Pap smear testing in PNG was introduced in 1999 by an Australian non-government organisation (MeriPath). Specimens were sent to Australia for testing with results being returned after a month or so.<sup>9</sup> Even though there are recommendations for cervical cancer screening in PNG<sup>8</sup> a national cervical screening program using the Pap test has not been adopted and cervical cancer screening occurs in an ad hoc manner.<sup>9</sup>

Studies in other low-income countries have identified several barriers to cervical cancer screening including; limited availability of screening opportunities perceived invulnerability to cervical cancer, lack of knowledge about the need for screening and lack of social support.<sup>10</sup>

However, no such studies have been conducted in PNG. Having a clearer understanding of why screening occurs in such an ad hoc way in PNG could assist in developing strategies to improve screening uptake.

**Literature review aims**

This review aimed to identify the barriers and enablers for cervical cancer screening in Papua New Guinea.

**METHODS**

A systematic search of peer-reviewed articles was conducted using the following electronic databases – PubMed, Medline, Scopus, CINAHL, Google scholar. Key search words included “cervical cancer” AND “screening” AND “barrier” AND “enablers” AND “Papua New Guinea” AND “Pacific” AND “low income country.” A defined set of inclusion and exclusion criteria was used and is described in **Table 1**.

**Table 1:** Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"> <li>• Published within last 10 years</li> <li>• Peer-reviewed journal articles</li> <li>• Original quantitative and qualitative research articles and review articles</li> <li>• Full-text available</li> <li>• Studies specifically related to PNG but with the option to extend to the Pacific or LICs if sufficient literature is not available</li> </ul>	<ul style="list-style-type: none"> <li>• Published before 2007</li> </ul>

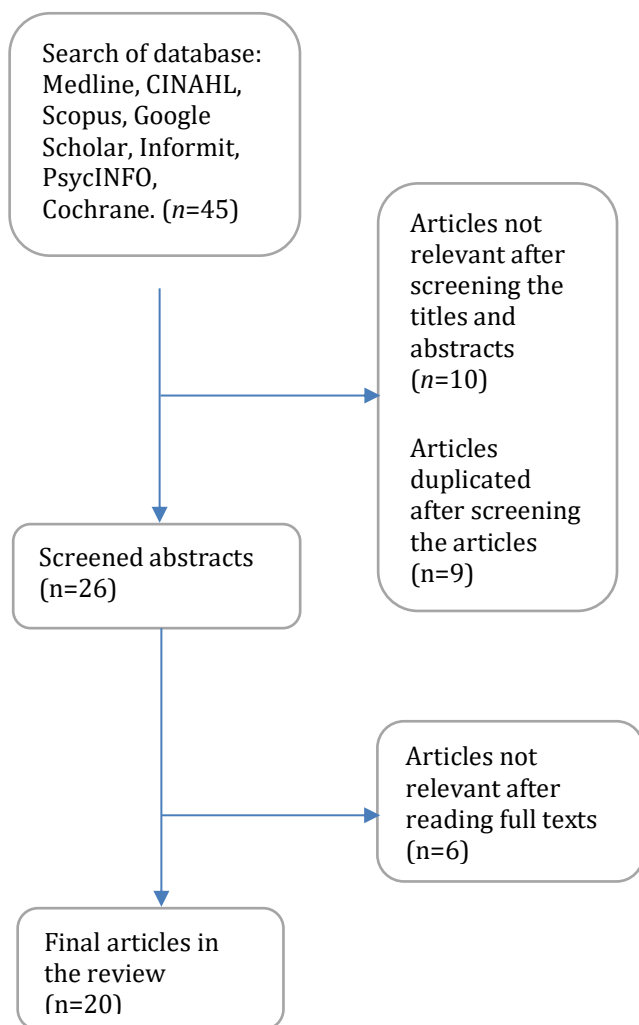
Titles and abstracts of all papers identified were screened to assess inclusion eligibility. After removal of articles that were not relevant or were duplicates, the full texts of 26 papers were read. A final 20 articles were assessed as being relevant for the review. The article selection process is shown in **Figure 1**.

**RESULTS**

Twenty articles met the inclusion criteria. These articles described the barriers and enablers of cervical cancer screening in the low-income countries including Pacific Island Countries, African countries, Asian countries and Latin American countries. A summary of the studies included in this review is in **Table 2**. A number of

barriers and enabling factors were identified in the studies and will be summarised under these two headings.

**Figure 1:** Search strategy



**1. Barriers for cervical cancer screening**

The main barriers for cervical cancer screening included a lack of women’s knowledge about cervical cancer and screening, a lack of health facilities for screening, diagnosis and treatment, lack of health care worker knowledge and training, lack of policy and guidelines, cultural beliefs and financial burdens.

**Lack of women’s knowledge**

A lack of women’s knowledge about cervical cancer screening was commonly reported. Balajadai *et al* found that women in Guam lack the knowledge on obtaining cervical cancer screening, and they described the positive benefits of introducing culturally appropriate

education programs within in the community that allow both genders to understand the issue.<sup>16</sup> Undergraduate female university students from 25 low- and middle-income countries identified a lack of educational programs on cervical cancer screening as a barrier.<sup>18,24,27</sup> In India, women lacked the knowledge of and attitude towards early detection of cervical cancer.<sup>19</sup> A total of 61.3% of female students from University of Ibadan, Nigeria, reported low level of cervical cancer knowledge on causation, risk factors, symptoms and screening for prevention.<sup>23</sup> This contributed to low cervical cancer screening uptake among the population.<sup>23</sup> A cross-sectional study with female students from a Nigerian university showed 58% of participants lacked the awareness of cervical cancer screening.<sup>26</sup> In addition, only 43% of female university students from South Africa reported they had heard about cervical cancer, with about 25% hearing about it from the community health worker.<sup>29</sup>

**Lack of health facilities for screening, diagnosis and treatment**

A number of studies identified lack of health facilities for screening, diagnosis and treatment of cervical cancer.<sup>11,12,15,20,22,23,24,26</sup> While these studies provide some insight they have a number of methodological limitations including the cross-sectional study design used,<sup>11,12,24,26</sup> limitations on data related to national cancer statistics,<sup>11</sup> no formal pilot testing of research tools, use of convenience sampling, self-reported data, and nonresponse on some questions.<sup>12</sup>

While Obel *et al* found some countries in the Pacific offered well-resourced and comprehensive national screening programs, access to a service delivery point was a barrier for some women having cervical cancer screening.<sup>11</sup> Appropriate means of tracking positive cases was also a barrier.<sup>11</sup>

In a cross-sectional study in five United States affiliated Pacific Island jurisdictions, Townsend *et al* described the limited access to diagnosis and treatment in remote islands as a barrier to cervical cancer screening.<sup>12</sup> Limited awareness of health professionals on emerging technologies for screening procedure was also identified as a barrier.<sup>12</sup>

Tabone *et al* reported limited access for rural women to access regular Pap smear screening and treatment compared to women living in the city.<sup>15</sup> Aniebue *et al* also highlighted access issues with 34% of female university students from Nigeria having no access to Pap smear screening.<sup>26</sup>

**Table 2:** Summary of studies included in the review

Paper	Purpose	Sampling and participants	Study design and collection	Identified barriers and enablers for cervical cancer screening	Limitations
Obel J <i>et al.</i> <sup>11</sup> (2015)	To provide information for strengthening cervical cancer prevention in the Pacific by mapping current human papillomavirus (HPV) vaccination and cervical cancer practices, as well as intent and barriers to the introduction and maintenance of national HPV vaccination program.	Members within the ministry from Pacific Island Countries and territories. (n=21)	<b>Design:</b> Analytical cross-sectional study <b>Data collection:</b> Self-administered survey	<b>Barrier:</b> Programs depend on-health seeking behaviour among women, access to service delivery points, training of health personnel and appropriate means of tracking screening positive cases. Well-resourced compressive national screening program. Choice of screening test requires careful assessment and adaptation to national circumstances.	Limited data on national cancer prevention situation.
Townsend JS <i>et al.</i> <sup>12</sup> (2014)	Identify the opportunities and challenges with the current Cervical Cancer Screening Knowledge, Awareness, and Practices Among providers.	Health care workers from five U.S Affiliated Pacific Island Jurisdictions (USAPIJ). (n=72)	<b>Design:</b> Analytical cross-sectional study <b>Data collection:</b> Self-administered survey	<b>Barriers:</b> Lack of knowledge and practice of evidence-based guideline for cervical cancer. Limited access to diagnosis and treatment service in remote islands. Lack of healthcare resources. Limited awareness on emerging technologies for screening. Cultural beliefs against male provider performing the screening. Cost associated with screening.	Cross-sectional study. No formal pilot testing. Convenience sampling. Provider who filled the survey may not be familiar with programs such as family planning. Mixtures of health professionals with some of not context with cervical cancer screening. Non-response to some questions from the survey form. Self-reported data.
Mishra SI <i>et al.</i> <sup>13</sup> (2009)	To test the effectiveness of a theory-guided, culturally tailored cervical cancer education program designed to increase Pap smear use among Samoan women in US Territory of American Samoa.	Convenience sample of women who attended the three weekly sessions. Samoa. (n=398)	<b>Design:</b> Randomised Control Trial. Pre-test- post test <b>Data collection:</b> Self-report post survey, individual interview	<b>Enablers:</b> Education program increase twice changes of self-awareness on Pap smear for those who attended compared to those who did not. The knowledge they receive are risk factors, signs and symptoms, and prevention strategies.	Selection bias as no report on client decline during the study. No question of sexual activity even it was the main risk factor of cervical cancer.

Akinyemiju TF. <sup>14</sup> (2012)	To assess influences of household socioeconomic status, healthcare access and country level characteristics on breast and cervical cancer screening among women in developing countries.	Women age 18-69 (10,021), 40-69 (4,009) from the developing countries who participated in the World Health Survey in Congo, Mali, Chad, Comoros, Laos, Zambia, Burkina Faso, Nepal, Mauritania, Myanmar, Chana, Kenya, Malawi, Ethiopia and Bangladesh. Asia and Africa. (n=14, 030)	<b>Design:</b> Qualitative <b>Data collection:</b> Private survey, face to face interview	<b>Barriers:</b> Increase health expenditure in rural areas. Funding for training of educated health provider.	Respondents vulnerable to recall bias when responding to the survey.
Tabone T <i>et al.</i> <sup>15</sup> (2012)	To identify the HPV genotypes present in cervical cancer in the region.	Biopsies of women with cervical cancer, Papua New Guinea. (n=70)	<b>Design:</b> Experimental-Case reports <b>Data collection:</b> Specimens	<b>Barriers:</b> Limited access to regular Pap smear screening and treatment.	Bias sampling method (only one hospital) small sample size.
Balajadai RG <i>et al.</i> <sup>16</sup> (2008)	To assess cancer-related knowledge, attitudes, and promotion (KBA) among Chamorros on the island.	Women and men participated in the study, Chamorro. Guam. (n=266)	<b>Design:</b> Cross-sectional <b>Data collection:</b> Self-administered English survey	<b>Barrier:</b> Lack of knowledge about to obtain cervical cancer screening.	Enabler: Introduce culturally appropriate education programs.
Tsu VD <i>et al.</i> <sup>17</sup> (2013)	To present five compelling reasons for marshalling resources and taking action now, a time when need and opportunity are covering.	Women with breast and cervical cancer in Asia, Latin America, some African countries. (n=1, 040 000)	<b>Design:</b> Descriptive epidemiological study <b>Data collection:</b> Specimens	<b>Enabler:</b> Availability of multiple and cheap test.	Not mentioned.
Pengpid S <i>et al.</i> <sup>18</sup> (2014)	Investigate the attitude and practice of cervical cancer screening among female undergraduate university students in 25 low- middle-income countries.	Female undergraduate students from 25 low, middle income and emerging economy countries. Asia, Africa, America. (n=9, 194)	<b>Design:</b> Cross-sectional <b>Data collection:</b> Anonymous, self-administered English questionnaire	<b>Barrier:</b> Lack of available educational programs.	Enabler: Develop an educational program that increases the relevance of cervical cancer and practices that pertained it.
Raychaudhuri S <i>et al.</i> <sup>19</sup> (2012)	Review the current status of knowledge, attitudes and practice and screening of cervical cancer in countries of different development levels.	Studies conducted in India. Exit number of studies not indicated.	<b>Design:</b> Descriptive epidemiological study <b>Data collection:</b>	<b>Barrier:</b> Lack of knowledge and attitude among concerned population.	Not mentioned.

			Previous case studies		
Kolahdooz F <i>et al.</i> <sup>20</sup> (2014)	Explore the knowledge, attitudes and behaviours towards cancer screening among indigenous peoples worldwide.	Studies conducted among indigenous populations. (n=33)	<b>Design:</b> Systematic review	<b>Barriers:</b> Cultural beliefs, lack of available screening facilities.	Small number of publication for diverse indigenous populations.
Bradley J <i>et al.</i> <sup>21</sup> (2008)	Examine women's perspectives on and acceptability of new cervical screening and treatment approaches, management by mid-level staff, single visit strategies, treatment side effects and post treatment abstinence requirements in low-income countries.	Women who participated with the Alliance for Cervical Cancer Prevention (ACCP) by nurses.	<b>Design:</b> Literature Review	<b>Enablers:</b> Available staff in varies areas, staff provide caring, safe and all female friendly environment.	Some surveys scrutinised the visit in its entirety while others focused on the physical and emotional aspects of specific procedure and acceptability. Difficult to compare results between countries as only a fraction of the population were interviewed for overall population with qualitative studies.
Adsul P <i>et al.</i> <sup>22</sup> (2017)	Appraise existing published literature about community based cervical cancer screening programs.	Women who participated in studies in the community based cervical cancer screening, India. (n= 313, 553)	<b>Design:</b> Systematic Review	<b>Barriers:</b> Lack of health education, human and logistical requirements for implementation of program. Adequate training for providers.	Lack of information on adaptations and translation of effective intervention in social intact groups.
Oladepo O <i>et al.</i> <sup>23</sup> (2009)	To assess the knowledge of cervical cancer and current screening practices among female students at the University of Ibadan, Nigeria.	Female university students, Ibadan, Nigeria. (n=350)	<b>Design:</b> Cross-sectional <b>Data collection:</b> Questionnaires	<b>Barriers:</b> 61.3% stated low level of cervical cancer awareness. There is overall low level of knowledge of cervical cancer causation, risk factors, symptoms, screening test prevention. Low cervical cancer screening practice among study population.	Not mentioned.
Dhendup T <i>et al.</i> <sup>24</sup> (2014)	Describe the level of cervical cancer knowledge and screening behaviours among female university graduates attending the National Graduate Orientation Program (NGOP).	Female university students, Bhutan. (n=350)	<b>Design:</b> Cross-sectional study <b>Data collection:</b> Questionnaires	<b>Barriers:</b> Poor cervical cancer knowledge on risk factors and detection method. 53% responded better awareness link between cervical cancer and multiple sex partners, 50% early onset of sexual activity.	Not mentioned.
Rahman H <i>et al.</i> <sup>25</sup> (2015)	To assess baseline knowledge of cancer cervix, screening and practice of Pap smear screening among Sikkimese staff nurses in India.	Women were interviewed by nurses hospital in Sikkim, India. (n=320)	<b>Design:</b> Cross-sectional <b>Data collection:</b> Questionnaires	<b>Barriers:</b> Low level of knowledge on cervix cancer, screening and practice among nurses.	Not mentioned.

Aniebue PN <i>et al.</i> <sup>26</sup> (2010)	To assess awareness and practice of cervical cancer screening amongst female students in a Nigerian university.	Female undergraduate students, Enugu, Nigeria. (n=394)	<b>Design:</b> Cross-sectional survey <b>Data collection:</b> Questionnaires	<b>Barriers:</b> Lack of awareness of cervical cancer screening 58%. Lack of cervical cancer participation among students. Inaccessible of Pap smear to most women 34%.	Not mentioned.
Al-Naggar RA <i>et al.</i> <sup>27</sup> (2010)	To examine the level of knowledge and barriers towards cervical cancer screening of female university students.	Female students at the tertiary institutions, Selangor, Malaysia. (n=287)	<b>Design:</b> Cross-sectional survey <b>Data collection:</b> Questionnaires	<b>Barrier:</b> Adequate knowledge but poor practice of Pap smear test.	Not mentioned.
Lovell S <i>et al.</i> <sup>28</sup> (2007)	To describe the effects cervical screening on the women's decision to undergo the procedure.	Women who undergo developed cervical cancer despite undergoing regular smears South Auckland, NZ. (n=17)	<b>Design:</b> Qualitative interview <b>Data collection:</b> Interview	<b>Enabler:</b> Effectiveness of the program such as change with administration of how the women were notified.	Not mentioned.
Hoque E <i>et al.</i> <sup>29</sup> (2009)	The assessment of knowledge, their associated risk factors and screening method for undergraduate female students in University of Technology, Mangouthu.	Randomly selected undergraduate female students at Mangosuthu University =, South Africa. (n= 389)	<b>Design:</b> Cross-sectional descriptive study <b>Data collection:</b> Questionnaires	<b>Barriers:</b> Lack of cervical cancer knowledge on the associated risk factors and screening methods.	Not mentioned.
McAdam M <i>et al.</i> <sup>30</sup> (2010)	Evaluate potential screening and treatment strategies to assist with control of cervical cancer.	Females at the between 30 and 50. Vanuatu. (n=496)	<b>Design:</b> Pilot study <b>Data Collection:</b> Cervical samples	<b>Enabler:</b> Mandatory treatment and follow up.	Not mentioned.

### **Lack of health care workers (HCW) knowledge and experience**

A number of studies identified that lack of health care workers' knowledge of and experience in cervical cancer screening was a barrier. Obel *et al* states there is lack with training of health personnel to perform cervical cancer screening in the Pacific Island countries.<sup>11</sup> Approximately 42% of HCW indicated limited awareness on emerging technologies for screening.<sup>12</sup> They also reported a lack of knowledge on evidence-based guidelines for cervical cancer.<sup>12</sup> A review in India highlighted that health care providers required standardised training to upkeep their competency to practice the cervical cancer screening.<sup>22</sup> Rahman *et al* also identified nurses' limited knowledge level on cervical cancer, screening and practice as a barrier.<sup>25</sup>

### **Cultural Beliefs**

Having male providers performing cervical cancer screening was identified as a cultural barrier to women partaking in cervical cancer screening.<sup>12</sup> In this study an increase of female health care providers was seen as a way of increasing cervical cancer screening.<sup>12</sup> Kolahdooz *et al* have also identified cultural barriers towards cervical cancer screening among indigenous people globally.<sup>20</sup>

### **Financial**

Townsend *et al* identified that costs associated with cervical cancer screening was an obstacle for participating in cervical cancer screening.<sup>12</sup> Akinyemiju *et al* assessed the influence of household socioeconomic status (SES) on cervical cancer screening in women aged 18-69 years and found those residing in a rural, low- or middle-SES households had a significantly reduced likelihood of a pelvic exam or pap smear.<sup>14</sup>

## **2. Enablers for cervical cancer screening**

The main enablers for cervical cancer screening included women having access to education programs to increase their knowledge and awareness of cervical cancer screening, availability of cervical cancer screening services including female friendly environments and health care workers being trained to undertake screening.

### **Access to education to increase knowledge and awareness of cervical cancer screening**

Mishra *et al* assessed the effectiveness of education with Samoan women and showed their knowledge and uptake of cervical cancer screening significantly increased compared to

those who did not have access to education.<sup>13</sup> The intervention group underwent a cervical cancer education intervention with booklets written in English and Samoan language, skill building and behaviour exercises.<sup>13</sup> The education program ran for over three weeks and enhanced their knowledge on risk factors, signs and symptoms, and prevention strategies.<sup>13</sup> In the pre-test survey 30.2% of both control and intervention group self-reported obtaining a Pap smear.<sup>13</sup> During the post-test survey 38.4% control group compared to 61.7% of intervention group women self-reported undergoing cervical cancer screening.<sup>13</sup> A randomised control trial study design and large study sample was a strength of this research.<sup>13</sup> Exposure to educational brochures that promoted cervical cancer screening resulted in 97% of Chamorros women undertaking cervical cancer screening.<sup>16</sup> To prevent future generations from harm of cervical cancer, development of educational programs, training of professionals and changing community attitude was proposed by Tsu *et al* as the way forward.<sup>17</sup>

### **Availability of cervical cancer screening services**

Tsu *et al* found the availability of multiple and cheap tests, resulted in women engaging in screening in Asia, Latin America and some African countries.<sup>17</sup> These screening tests included Visual Inspection with Acetic Acid (VIA) and Human Papillomavirus (HPV) DNA testing with swab and results ready within few days, and Pap smear, where the specimens were sent to specialist cytology laboratory for analysis.<sup>17</sup> Ability of staff to provide friendly, caring, safe and an all-female environment was found to be important in promoting cervical cancer screening.<sup>21</sup> A pilot study conducted in Vanuatu showed that mandatory treatment and follow-up approaches to support cervical cancer screening enabled women to undertake screening.<sup>30</sup> Likewise a qualitative study conducted in New Zealand highlighted the effectiveness of cervical cancer screening through an administrative change of how women were notified about the test.<sup>28</sup>

### **Trained health care workers**

Bradley *et al* discussed the availability of nurses providing screening and treatment for cervical cancer such as the cryotherapy procedures, which was previously a procedure performed by physicians only.<sup>21</sup> Their availability at various areas of the health facility encouraged women to access the service whenever they are at the facility and not wait till they are a specific clinic site where there are doctors.<sup>21</sup> The downside of this study was the inconsistency in how the survey was conducted between countries, which



may have influenced the results.<sup>21</sup> In some poor resourced countries, procedures such as loop excision by trained health care practitioners can be provided in the hospital settings, thus improving access to this treatment.<sup>30</sup>

## DISCUSSION

The aim of this review was to identify the enablers and barriers for cervical cancer screening in Papua New Guinea. Access to regular Pap smear screening in PNG was only discussed in one study<sup>15</sup> indicating the need for further research about cervical cancer screening in PNG. However, studies that were conducted in Pacific Island Countries or other low-income countries did allow the identification of consistent barriers and enablers that may also be relevant in the PNG context.

Lack of women's knowledge about cervical cancer screening is a commonly reported barrier and there needs to be strategies available that promote education about cervical cancer screening.<sup>18, 22</sup> For women to participate in screening they must have the knowledge of the disease and how it is screened. In the U.S Territory of American Samoa, education of Samoan women was designed in a collective approach with religious elders, community leaders and government leaders to encourage the women's participation.<sup>13</sup> This approach enabled Samoan women to be able to share their cultural beliefs and social norms in the context of their traditional and religious beliefs and could have relevance and application in the PNG context.<sup>13</sup>

In low-resource settings, it is important to use affordable and available resources to disseminate vital health information to the women. For example, utilising places of worship could be one avenue and these have been used successfully elsewhere for a range of topics. The use of church-based community health promotion has been found to produce positive outcomes such as stronger partnerships, positive health values, improved service availability, easy access to church facilities, interventions on community focused needs, change in health behaviour and positive support of social relations.<sup>33</sup> Churches and religious organisations are becoming popular settings for health promotion on a range of health related issues as well as being a setting for research studies.<sup>34</sup> These organisations have the potential to improve health related outcomes with influences through multiple levels.<sup>35</sup> Similar approaches through churches may also be relevant for cervical cancer education in PNG. Community Health Workers (CHWs) working in

rural locations could also be trained and supported to undertake education of women and provide advocacy in regard to screening.

Access to services is a big issue and women cannot engage in cervical cancer screening if there is no service to deliver it (and diagnose and treat). While countries with a strong health system are better placed to implement screening programs, this is complex in PNG. In PNG, there is only one national referral hospital, one specialist psychiatric hospital, four regional and 16 provincial public hospitals that serves 80% of the population living in rural areas.<sup>32</sup> In 2008, 80% of medical officers' worked in urban areas while the remaining 20% worked in the rural areas indicating an insufficient health workforce in the rural areas.<sup>32</sup> Rural aid posts are mainly staffed by CHWs who provide primary health care and are not eligible to perform cervical cancer screening, thus hindering the access of services to the women.<sup>32</sup> Future policy in PNG that provides clear guidelines on newly recommended cervical cancer screening processes<sup>7</sup> will be important, as well as consideration of the ability of the health system to undertake laboratory testing in a timely manner and undertake further evaluation and treatment where required.

Lack of health professional knowledge and skills is also a barrier with a number of studies in the review highlighting this as an issue.<sup>12, 16, 19, 29</sup> It is important that opportunities for health professional training in low resource settings including PNG are developed and content could be a core part of nursing and midwifery curriculum.

## I.Limitations

While the search strategies conducted in this literature review were as thorough as possible, it is possible some research will have been missed that could provide further insight into the topic being investigated. However, there was an overall consistency regarding the findings in relation to the barriers and enablers for cervical cancer screening in low-income countries.

## CONCLUSION

While the literature highlighted the importance of cervical cancer screening, a range of barriers limits the delivery of this service in low income country settings. In particular, there is a gap in the knowledge of barriers and enablers within PNG and further research in this country is required. Applying the knowledge learned from other low-income countries and gaining a clearer understanding of both the barriers and enablers

for cervical cancer screening in the PNG context may lead to clear recommendations to improve implementation and uptake of cervical cancer screening.

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