FACTORS AFFECTING CERVICAL CANCER SCREENING AMONG WOMEN OF CHILD BEARING AGE, ATTENDING INTERMEDIATE HOSPITAL OSHAKATI (IHO), OSHANA REGION, NAMIBIA: A CASE-CONTROL STUDY

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ABSTRACT

Cervical cancer is the second most prevalent cancer among women after breast cancer, in Namibia. Human Papilloma Virus is the significant cause of cervical cancer prevalence world-wide with an estimation of 99.7%. The World Health Organisation (WHO) predict that Cervical cancer will kill >443,000 women worldwide every year by 2030, nearly 90% of them in Sub-Saharan Africa. Nevertheless, cervical cancer is potentially preventable through HPV vaccination, early diagnosis of pre-invasive cancer cells and early diagnosis of proven cases of cervical cancer neoplasia. Cervical cancer screening and early treatment of pre-invasive cervical cancer remain the most effective ways to reduce cervical cancer mortalities. A significant number of women in Oshana region do not utilize the cervical cancer screening services despite a well-established free cervical cancer screening programme in the region .This study examined factors associated with cervical cancer screening and determined associations between cervical cancer screening and identified factors.

An unmatched 1:1 case control study was conducted on 207 cases and 207 controls. A case was defined as any woman aged 15-49 years, seeking services at Intermediate Hospital Oshakati ante-natal clinic during the study period, and never had cervical cancer screening in her life time. A control was any woman aged 15-49 years, seeking services at Intermediate Hospital Oshakati ante-natal clinic during the study period, had cervical cancer screening in her life time. Data were collected using a self-administered structured questionnaire between September and October 2017. Data were analysed with Epi-info 7.2. Bivariate analysis was conducted to determine the odds ratio at 95% CI. Factors which were significant at p-value < 0.05 were retained in the multiple logistic regression analysis model.

Cases were significantly younger than controls (AOR= 3.10, 95% CI: 1.41 - 9.23, P-value= 0.001). Increased parity was found to be an important determinant for being screened for cervical cancer (AOR= 4.50, 95% CI: 2.25-9.02, P-v= 0.001). The multivariate analysis found that, fear screening will reveal cervical cancer (AOR= 0.54, 95% CI:0.34 - 0.85, *P-v*= 0.008), fear of pain from the procedure (AOR= 0.23,95% CI:0.15 - 0.64 *P-v*= 0.001), lack of signs and symptoms of the disease (AOR= 0.41, 95% CI:0.26 - 0.64, *P-v*= 0.001) and low perceived risk of the disease (AOR= 0.54, 95% CI: 0.34 - 0.85, *P-v*= 0.007) were most significantly associated with cervical cancer screening.

Identified factors may serve as targets for cervical cancer screening health education interventions by health care health workers. There is need to develop targeted interventions which will promote utilization of cervical cancer screening inclusive of young women.

PUBLICATIONS/CONFERENCES(S) PROCEEDINGS

Trends of HIV patients initiated on Antiretroviral Therapy (ART), Intermediate Hospital Oshakati ART-Clinic 2011-2015, Oshana Region, Namibia: Secondary Data Analysis. Presented at the 9th Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET) Global Scientific Conference, 7-11 August 2017 at Chiang Mai, Thailand.

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LIST OF ACRONYMS

ANC	Ante Natal Care
AOR	Adjusted Odds Ratio
CA	Cancer
CAN	Cancer Association of Namibia
CI	Confidence Interval
CIN	Cervical Intraepithelial Neoplasia
COR	Crude Odds Ratios
FIGO	International Federation of Gynaecology and Obstetric
DNA	Deoxyribonucleic Acid
HIV	Human Immuno-Virus
HPV	Human Papilloma Virus
IHO	Intermediate Hospital Oshakati
IUCC	International Union against Cervical Cancer
LARC	International Agency Research on Cancer
LEEP	Loop Electrosurgical Excision Procedure
LMIC	Low-Middle-Income Countries
MoHSS	Ministry of Health and Social Services
Nam-FELTP	Namibia Field Epidemiology and Laboratory Training Programme
OR	Odds ratio

P.V	Probability value
PID	Pelvic Inflammatory Disease
VIA	Visual Inspection Ascetic-Acid
WHO	World Health Organisation
X^2	Chi-Square

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I dedicate this thesis to my grandmother, ‘Meekulu’ Hendrina Ndimuwa ya Nghiningishiwa whose love and patience have been a great source of inspiration. Finally, I dedicate this thesis to all women that fought and lost the fight to cervical cancer.

DECLARATIONS

I Ndiitodino “Kekango” ya Kakehongo, hereby declare that “Factors affecting cervical cancer screening among women of child bearing age attending, Intermediate Hospital Oshakati, Namibia,” is a true reflection of my own work and it has therefore not been submitted before, for any degree or examination at any other institution of high learning.

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CHAPTER 1

1. INTRODUCTION

This chapter presents background information concerning cervical cancer and cervical cancer screening, problem statement, study purpose, objectives of the study, significance of the study and definition of operational terms.

1.2 Background of the study

Cervical cancer is a disease in which cancer cells form in the tissue of the cervix (the lower, narrow end of the uterus) [(1)]. Worldwide, cervical cancer incidence is on the increase ,and is among the leading causes of morbidity and mortality, especially in developing countries [(2)(3)]. It is estimated that about 1 million plus women are currently living with cervical cancer globally. In Sub-Saharan Africa, cervical cancer is the second most prevalent type of cancer among women after breast cancer [(3)(4)]. A majority of cervical cancers (over 80%) in Sub-Saharan Africa are detected in late stage, predominantly due to lack of information about cervical cancer and prevention services [(5)]. This is a great concern considering that the disease is preventable and curable when detected early. Late-stage is associated with low survival rate after surgery and radiotherapy [(5)(6)].

Cervical cancer is the second most common cancer among women living in low-resourced-countries with an estimated 445, 000 new cases in 2012, and 84% new cases worldwide [(3)(2)]. In the same year (2012) about 270,000 women were estimated to have died from cervical cancer worldwide and more than 85% of these deaths occurred in low- and middle-income countries [(3)]. According to WHO, Cervical cancer will kill >443,000 women worldwide every year by

2030, nearly 90% of them in Sub-Saharan Africa [2]. The World Health Organization recommended that member states initiate a cancer registry as a framework for measuring and assessing the impact of cancers in their communities [2]. In Namibia, a cancer registry was started in 1995 to provide database information that will lead to improved cancer prevention and control among the population [7]. The Cancer Registry of Namibia also serves as a surveillance tool for measuring effectiveness of cancer control programmes [7].

According to the Cancer Association of Namibia (CAN), a total of 1140 (18%) cervical cancer cases were reported in Namibia for the period 2010 to 2014, after breast cancer with 1685 (26.1%) [8]. The Human Papilloma Virus (HPV) is a significant cause of cervical cancer prevalence world-wide with an estimation of 99.7% [9][4]. Cervical cancer is the easiest gynaecological cancer to prevent through vaccination that protects against Human Papilloma Virus (HPV) infection as a primary prevention (vaccinations against HPV) and secondary preventions through Visual Inspection Ascetic Acid (VIA) and the Papnicolaou smear (Pap smear) test which detect pre-invasive cancer cells [1][4].

The screening programmes have greatly reduced the incidence and mortality due to cervical cancer in developed countries, however, this benefit is not the case in the developing world, even though more than 70% of cases occur in developing countries [10]. Cervical cancer screening and early treatment of pre-invasive cervical cancer, when detected early remains the most effective way to reduce mortalities associated with cervical cancer [11]. Therefore the current study examined factors associated with cervical cancer screening among women aged 15-49 attending Intermediate Hospital Oshakati Ante Natal Clinic (ANC).

1.3 Problem statement

Cervical cancer is a public health concern in Namibia, as it is the second most common cancer among women after breast cancer [7][8][12]. Cases of cervical cancer are on the increase in Oshana region [13]. Facility-based data for Intermediate Hospital Oshakati (IHO) in Oshana region from 2013-2016, indicate that cervical cancer was the most common (22.74%) diagnosed cancer among all cancer cases followed by breast cancer at 12.95% [13]. Oshana region has 20 health facilities all of which conduct cervical cancer screening [14]. Oshana region has an estimated total population of 191,898 with 104, 715 (54.6%) women and 56,994 (54.42) women of child bearing age (15-49) [15]. These are among the population considered at risk of developing cervical cancer, and are therefore targeted for cervical cancer screening (pap smear) as approved by World Health Organization (WHO) for use in many member countries including Namibia [3].

Currently, the pap smear test is a cervical cancer screening test of choice in Namibia that is recommended for women of child-bearing age, older and sexually active women and is available for free at all Primary Health Care (PHC) facilities [12][14]. According to the 2013 Namibia Demographic Health Survey (NDHS), about 65% of women from Oshana region never had a pap smear test in their life time [12]. This clearly depicts that, a significant number of women in Oshana region do not utilize the cervical cancer screening services despite a well-established free cervical cancer screening programme in the region. This increases the risk of women presenting in late stage of cervical cancer at health facilities which is associated with high mortality. The researcher did not come across a published study which investigated factors affecting cervical cancer screening in Namibia, hence the need to investigate.

1.4 Purpose of the study

The purpose of the study was to determine the factors affecting women of child-bearing age (15-49) in Oshana region to seek cervical cancer screening at IHO ante natal clinic (ANC). The findings will be made available to other health care workers and contribute to the continuous health education about the importance of cervical cancer screening.

1.5 Objectives of the study

The objectives of the study were to:

- Determine socio-demographic characteristic of women seeking cervical cancer screening at Intermediate Hospital Oshakati ANC.
- Identify factors that act as a barriers to utilization of cervical cancer screening among women of child bearing age (15-49) attending Intermediate Hospital Oshakati Ante Natal Clinic.
- Determine the association between identified factors and cervical cancer screening

1.6 Significance of the study

The study seeks to provide evidence-based information to MoHSS so that cervical cancer screening services can be strengthened by knowledge of factors that prevent women from making use of screening services. It is anticipated that study findings may form a basis for future studies.

1.7 Operational definitions of terms

Cervical cancer screening: is "an examination involving collecting cells from the cervix (the lower, narrow end of uterus) to detect and diagnose abnormal (pre-cancerous) cancer cells in

asymptomatic persons before they develop into cancer" [3]. In this study, cervical cancer screening refers to the examination involving collecting cells from the surface of the cervix among women of child-bearing age seeking services at IHO ante natal care clinic.

Screening: Screening refers to "any examination for identification of unrecognized disease, disease precursors, or susceptibility to disease in persons without evidence of disease, focuses on healthy persons, to looks for asymptomatic disease"[16]. In this study, screening refers to the examination of the cervix to recognize cervical cancer cells among women of child bearing age.

Women of child bearing age: " Women in the process of conceiving, being pregnant with and giving birth to children" [17]. In this study Women of child-bearing age refers to women aged 15-49 years.

Cervical cancer: Cervical cancer is "the malignant growth in the tissue or cells of the cervix, characterised by abnormal cells that grow out of control, multiply and crowd out normal cells" [3]. In this study, cervical cancer means the disease in which cancer cells form in the cervix.

Cancer: Cancer is "an abnormal growth in the tissue or cells which tends to proliferate in an uncontrollable way and in some cases to metastasize (spread), always named after the part of the body where it originates" [1]. In this study, cancer refers to the abnormal growth of the cancer cells in the cervix.

Cervix: The lower, narrow end of the uterus, which opens in the birth canal [1]. In this study it refers to the site where a cervical cancer screening or pap smear test is done.

Case-control study: Is an observational, analytical epidemiological study which identify and select subjects on the basis of whether they do (cases) or do not (controls) have a particular disease or health condition (or another outcome variable) of interest or under study [18]. In this study, cases refers to women aged 15-49 years who never had a Pap smear screening in their

lifetime, while controls refers to women who had cervical cancer screening done in their lifetime.

1.8 SUMMARY

This chapter outlined background information concerning cervical cancer screening. It highlighted why the study was conducted. It also highlighted problem statement, purpose and objectives. Chapter two will discuss the review of literature pertaining to cervical cancer screening among different settings.

1.9 Organisation of chapters

Chapter 1: Present the introduction and background information about the global and African burden of cervical cancer and cervical cancer screening services. The chapter also covers problem statement, purpose, significance and study objectives.

Chapter 2: Covers literature review

Chapter 3: Presents the research design and methodology

Chapter 4: Presents findings of the study

Chapter 5: Presents the discussion of results, similarities, differences, conclusion, recommendations and limitations of the study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

A literature review is a written appraisal of what is already known (existing knowledge) on a topic, aimed at communicating to the reader what is already known about the topic of interest (19). A literature review is where the researcher shows that he or she is aware of and can interpret what is already known and eventually be able to point out the contradictions and gaps in the existing knowledge of the researcher (19).

Reviewing published literature is relevant in determining factors that have been found to influence cervical cancer screening behaviours among women. This chapter presents literature review on the epidemiology of cervical cancer with emphasis on mode of transmissions, risk factors for developing cervical cancer, primary preventions and screening services, clinical features, staging and diagnosis as well as treatment of cervical cancer [(11)].Various factors that are associated with cervical cancer screening among women in different settings as identified by prior researchers are also discussed.

2.2. EPIDEMIOLOGY OF CERVICAL CANCER

2.2.1 Mode of Transmissions

The primary cause of cervical cancer is infection with Human Papilloma Virus (HPV) [(3)]. This virus is commonly acquired during direct sexual intercourse (vaginal or anal) [(3)(20)]. Other modes of transmission include contact with genital skin, mucous membranes or bodily fluids of a partner with subclinical HPV infection and through skin-to-skin contact [(11)]. According to

WHO, at least 50% of all sexually active women will have HPV once in their life time and the virus can even be passed when the infected individual has no symptoms [20][6].

2.2.2 Human Papilloma Virus

Human Papilloma Virus (HPV) is the primary etiologic infectious agent associated with cervical cancer [11] [21]. It is the significant cause of cervical cancer prevalence world-wide with an estimation of 99.7% [9] [4]. There are more than 100 types of HPV and 14 are considered high risk for cervical cancer and of these, HPV type 16 and 18 are considered the highest risk and responsible for approximately 70 percent (about two-third) of all cervical cancers [1]. HPV can infect cells on the surface of the skin and other mucous membrane, but not the blood or internal organs such as the heart or lungs [21].

2.2.3 Risk factors of developing cervical cancer

Different cancers have different risk factors. In thinking about risk factors, it helps to focus on those you can change or avoid (like smoking or HPV infection) rather than those you cannot (such as your age and family history) [22]. However , it is still important that you know about risk factors that cannot be changed, because it is even more important for women to have these factors to get cervical cancer screening or Pap smear test to detect pre-invasive cervical cancer early [4][23].

Established risk factors for developing cervical cancer includes, early age sexual activities, multiple partners, use of oral contraceptives, higher parity, having a family history of cervical cancer, smoking and immunosuppression such as viral infection e.g. HIV [22]. Although these risk factors increase the odds of developing cervical cancer, many women with these risk

factors do not develop the disease [16]. When a woman develops cervical cancer or pre-cancerous changes, it might not be possible to say that a particular risk factor was the cause [4].

2.2.3.1 Cigarette smoking

Tobacco smoking is a well-established human papillomavirus (HPV) cofactor for development of cervical precancer and cancer [24].When someone smokes, they and those around them are exposed to many cancer-causing chemicals that affect organs other than the lungs [16]. These harmful substances are absorbed through the lungs and carried in the blood stream throughout the body. Women who smoke are about twice as likely as non-smokers to get cervical cancer [11]. Tobacco by-products have been found in the cervical mucus of women who smoke [16] Researchers believe that these substances damage the DNA of the cervix cells and may contribute to the development of cervical cancer [24]. Both active and passive cigarette smoking increases the risk of cervical cancer. Smoking also makes the immune system less effective in fighting HPV infections [1].

Numerous studies have found abundant evidence of the link between smoking and cervical cancer. A longitudinal study conducted among 1075 HPV-negative women and 410 HPV-positve (n=1485) women aged 15-19 to measure smoking, cervical human papilloma virus (HPV) status among other factors to measure the risk of Cervical Intraeoithelial (CIN) in relation to change in smoking and HPV infection revealed that current smoking intensity was an independent risk factor for high-grade CIN after controlling for cervical HPV infections [25]. The same analysis futher revealed that, while non smoker studied women were six times as likely to develop cervical cancer if infected with HPV virus, smokers were more than 14 times as likely to get cervical cancer within nine years if they had the virus [25]. Congruently, a meta-

analysis and multi-institutional studies to analyse studies conducted on invasive cancer and carcinoma *in situ* and smoking by the International Agency for Research on Cancer (IARC) concluded that, ever smoker have an excess risk factor for cervical cancer that persists after controlling for potential cofactors of progression from infection to cancer [(26)].

2.2.3.2 Having a family history of cervical cancer

Cervical cancer may run in some families [(4)]. If your mother or sister had cervical cancer, your chances of developing the disease are 2 to 3 times higher than if no one in your family had it [(11)].

2.2.3.3 Other risk factors (immunosuppression, increased parity and long-term use of oral contraceptives pills)

Immunosuppression due to viral infections such as HIV and hormonal influence on cervical epithelium have been suggested as causative factors associated with the development of cervical neoplasia [(11)]. Studies suggest that Human Immunodeficiency Virus (HIV) positive women, have high rates of Cervical Intraepithelial Neoplasia (CIN) compare to HIV-negative to women [(11)]. Hence the World Health Organization (WHO) recommends that all HIV positive women be screened for cervical cancer yearly [(3)]. Increased parity and oral contraceptive pills use have been correlated with cervical cancer, but literature has indicated that this is unclear if is related to early sexual activities, progestin exposure or other unknown factors [(11)].

2.2.4 Clinical features

Early cancers and pre-cancers are usually asymptomatic [(11)]. Symptoms begin when cervical cancer becomes invasive and spread to the nearest tissues [(11)]. The most common symptoms includes abnormal vaginal discharge, bleeding and spotting between periods or having

prolonged menstrual periods or heavier than usual, unusual pain during sex and lower backache [(1)]. However, these signs can also be caused by other conditions other than cervical cancer [(11)(27)], for instance, Pelvic Inflammatory Diseases (PIDs) and other infections. Women are advised to seek professional care since ignoring them may permit the cancer to grow into a more advanced stage and lower the effectiveness of treatment [(27)]. In most cases, symptoms may be absent until the cancer is in its advanced stage and this is why screening is so important [(28)].

2.2.5 Preventions and early detection of cervical cancer

Reviewed literature identified several interventions that are found to be effective in the reduction of cervical cancer burden worldwide. Vaccination against HPV and adherence to cervical cancer screening such as Visual Inspection with Ascetic acid (VIA), HPV DNA testing and Pap smear test have been found to be effective in preventing pre-invasive cancer to progress to invasive cervical cancer [(5)].

2.2.5.1 Primary preventions

Primary preventions of cervical cancer include behavioural interventions such as delaying sexual activities, limiting the number of sexual partners and barrier protection during sexual activities by use of condoms and vaccinations against the Human Papilloma Virus (HPV) infections [(22)]. The discovery of HPV as the predominantly cause of cervical cancer has necessitated the administration of HPV vaccine as a primary means of cervical cancer prevention [(3)]. The primary target group population for HPV vaccine are young adolescent girls aged 9 to 14 years [(3)].

According to WHO, the vaccine has the potential to reduce cervical cancer incidence worldwide by 70%; the remaining 30% can be prevented through regular screening [3][6]. The most common HPV Vaccine used globally are bivalent and quantrivalent. Both of this vaccines cover HPV 16 and 18 and can prevent the majority of cervical cancers [21]. In Namibia, HPV vaccine is available in private sectors, however the government's plans to integrate HPV vaccine within its framework of national immunization programmes are at an advance stage.

2.2.5.2 Cervical cancer screening (secondary preventions of cervical cancer)

2.2.5.2.1 Pap Smear

For women who did not receive the vaccine and have already acquired the infection, screening (Pap test) will be the principal preventive measure to reduce cervical cancer [21]. Pap smear test is one of the screening methods for cervical cancer, which is a conventional cervical cytology test which involves the collection of cells from the cervix that are examined under a microscopy for pre-invasive cancer [1][4].

A positive Pap smear test is followed by a colposcopy with biopsy to examine the cervix for signs of disease [21]. The main target of cervical cancer screening is to identify early invasive cancer and more importantly, cervical intraepithelial neoplasia (CIN), a premalignant lesion that can progress to cervical cancer if left untreated [11]. Based on the severity of dysplasia CIN is categorised into CIN1 (low grade), CIN2 and CIN3 [11][21].

The Pap smear or cervical cancer screening has been shown to effectively lower the risk of developing invasive cervical cancer by detecting precancerous changes [1]. The following is the

Namibian guideline as adopted from WHO for cervical cancer screening, however, women not included in this group for whom cervical cancer screening is recommended or on own initiative request to be screened, should not be denied services [14] :

- Pap smear screening should be offered to all eligible sexually active women when attending health facilities for any other reason.
- Sexually active adolescent girls and young women screening should be screened yearly after sexual debut.
- Sexually active woman who are infected with HIV should be screened at yearly (1) intervals.
- Sexually active woman aged 25-49 years should be screened at a three (3) year intervals.
- Sexually active women aged 50 and above should be screened at five (5) year intervals.
- Sexually active women aged 65 and above should enjoy a Pap smear free life provided their Pap smear at 65 or thereafter is negative and they are HIV negative.

2.2.5.2.2 HPV DNA Testing

The World Health Organisation recommends HPV DNA testing as the primary cervical cancer screening [21]. In this test, the health care worker takes a sample from the cervix using a swab or brush and a laboratory test is used to detect high risk types of HPV in the sample [21] The test is believed to be approximately >90% sensitive than a single pap smear test alone [11] [21]. The HPV DNA test leads to early detections of high-grade neoplasia, however there is a

significant loss of specificity especially in young women, because young women are more likely to have an HPV infection that will go away on its own [3].

2.2.5.2.3 Visual Inspection with Ascetic acid (VIA)

A Pap smear test or HPV DNA testing may not be feasible in countries with limited resources and WHO recommends a VIA as an alternative [21]. Visual Inspection Ascetic (VIA) entails the brushing/application of acetic acid (Vinegar) on a woman's cervix during a vaginal examination which makes precancerous spots turn white (acetowhite lesion at the squamo-columner junction of the cervix) which is visible to the naked eye [5].

The VIA is sensitive, cheap and non-invasive screening method which can be done in low-level health facilities such as health centres and it provides instant results [11]. Those eligible for treatment can receive treatment of the precancerous lesions using cryotherapy (involves the destruction of abnormal cervical tissues through freezing) on the same day and in the same health facility [5]. This ensures adherence to treatment soon after diagnosis. Cryotherapy is affordable and there is no need for complicated equipment such as laboratory infrastructures and it can be done by less specialized personnel, and thus can be implanted at Primary Health Care (PHC) settings [5] .

2.3 STAGING AND DIAGNOSIS OF CERVICAL CANCER

Invasive cervical cancers are diagnosed based on cone biopsy following an abnormal pap test and colposcopy [11]. In cone biopsy or cervical conisation, a cone-shaped piece of the tissue is removed from the cervix and examined under the microscope for precancerous or cancerous cells [23]. The staging system widely used for cervical cancer is that developed by the

International Federation of Gynaecology and Obstetrics (FIGO) in collaboration with the World Health Organization (WHO) and the International Union Against Cervical Cancer (IUCC) [11]. Early stage disease refers to FIGO stage I through IIA, and advanced stage disease is described in stage IIB and higher as described in table 2.1 below [11]

Table 2.1: FIGO staging of cervical cancer

Stage	**Characteristic**
0	**Carcinoma in situ** The cancer cells are only in the cells on the surface of the cervix (the layer of cells lining the cervix), without growing into (invading) deeper tissues of the cervix.
Stage I	**Carcinoma invaded and strictly confined to the cervix but is not growing outside the uterus (extension to corpus should be disregarded).**
Stage IA	Invasive carcinoma that can be diagnosed only by microscopy, with deepest invasion ≤ 5 mm and largest extension ≤ 7mm.
Stage IA1	Measured invasion of stroma no greater than 3 mm in depth and no greater than 7 mm.
Stage IA2	Measured invasion of stroma greater than 3 mm and no greater than 5 mm in depth and no wider than 7 mm.
Stage IB	Clinical lesions confined to the cervix or preclinical lesion greater than IA
Stage IB1	Clinical lesions no greater than 4 cm in size
Stage IB2	Clinical lesions greater than 4 cm in size
Stage II	**Carcinoma extends beyond cervix but has not extended to pelvic wall; it involves vagina, but not as far as the lower third.**
IIA	No obvious parametrial invasion

IIA1	Clinical lesions no greater than 4 cm in size
IIA2	Clinical lesions greater than 4 cm in size
IIB	Obvious parametrial involvement
Stage III	**Carcinoma has extended to the pelvic wall; on rectal examination there is no cancer-free space between tumour and pelvic wall; tumour involves lower third of vagina, all cases with hydronephrosis or non-functioning kidney should be included, unless they are known to be due to another cause.**
IIIA	No extension to pelvic wall, but involvement of lower third of vagina
IIIB	Extension to pelvic wall and/or hydronephrosis or non-functioning kidney due to tumour
Stage IV	**This is the most advanced stage of cervical cancer. Carcinoma has extended beyond true pelvis, spread to nearby organs and other parts of the body or has clinically involved.**
IVA	Spread of growth to the adjacent pelvic organs such as the bladder or rectum, but not distant sites.
IVB	Spread to the distant organs beyond the pelvis, such as liver.

2.4 MANAGEMENT AND TREATMENT OF CERVICAL CANCER

The World Health Organization (WHO) guidelines for the screening and treatment of pre-cancerous lesions for cervical cancer preventions was updated in 2013 [(6)]. In this updated version, the goal of a screen-and-treat programme for cervical cancer is to reduce cervical cancer and related mortality with relatively few adverse events [(6)]. The treatment of cervical cancer is primarily aimed at reductions or elimination of long-term impairment and disabilities,

minimizing the spread of disease and suffering, optimizing functions and sometimes recovery [11].

There are several ways to treat pre-cancerous and cancer cells found in the cervix, and treatment is very effective if commenced at an early stage [11][21]. Precancerous cervical lesions can be treated with a Loop Electrosurgical Excision Procedure (LEEP), which removes abnormal tissues with a wire loop heated by electric current; cryotherapy, the destructions of cells with extreme cold; laser ablation, removal of tissues or conisation, the removal of a cone-shaped piece of tissue containing the abnormal tissue [11].

The WHO guidelines recommend cryotherapy as the treatment of choice when a lesion is identified through screening since it is easy and inexpensive. However, if a lesion is not eligible for cryotherapy, LEEP should be considered as an alternative treatment [11][6]. Invasive cervical cancers are generally treated with surgery, radiations and chemotherapy or a combination of both, however, radiotherapy is often needed for cervical cancer treatments [11][21].

2.5 FACTORS AFFECTING CERVICAL CANCER SCREENING

2.5.1 Test is too embarrassing

A review of available literature revealed that cervical cancer screening has been viewed by most women as embarrassing, since it involves female reproductive organs [29]. A population survey conducted in Jamaica (a country where cervical cancer is the second-leading cause of mortality among women) which included 367 clinics attending to women aged 25-54 to assess factors affecting cervical cancer screening among Jamaican women, revealed that there is an

association between embarrassment and cervical cancer screening: some women indicated that a Pap smear test is very embarrassing and uncomfortable [10]. A similar study conducted in Kenya revealed similar results with some women responding that the "procedure is very embarrassing especially if your private parts are being examined by a male doctor". The test may be perceived as sensitive especially in African countries where issues pertaining to sexuality and the reproductive system are considered a secret [28].

2.5.2 Fear that test will reveal cancer

A hospital-based study conducted in India, which included 812 participants, found that about 54% of the study population believed that the Pap smear test is used to diagnose cancer and other sexually transmitted diseases, so they fear being diagnosed with cervical cancer. Some respondents feared that being diagnosed with a disease of the private parts may mean that the woman has cheated on her partner which may cause conflicts, hence the reluctance [30]. The fear of being diagnosed with cervical cancer has been reported as a barrier to cervical cancer screening among Kenyan women, where respondents believed that being diagnosed with a sexually transmitted disease is associated with promiscuous behaviours [31].

2.5.3 Socio-economic factors

The literature reviewed reveals that access to health care services may be associated with receipt of cervical cancer screening especially in countries where women pay for screening service [2]**.** India is a patriarchal society were men are the sole decision-makers in economic and social issues pertaining to the family [30]. Therefore, it can be troublesome for a woman to ask for money from her husband to go to the hospital for cervical cancer screening [30]. Many low-income women do not have easy access to adequate health care services, including Pap

smear test. This means they may not get screened or treated for cervical pre-cancers. In Kenya, women in higher occupational class had a higher likelihood of cervical cancer screening compared to those in the lowest class as they are more independent than their lower-income counterparts, and are thus able to make their own decisions [28]. In Jamaica, failure to screen is associated with different factors such as low-income levels since women pay for the screening [10] which is different from Namibia where screening is provided free of charge and is available at primary health care facilities [12].

2.5.4 Marital status

The findings of a cross-sectional study with 424 participants conducted in Kenya to investigate determinants of cervical cancer screening among women of reproductive age 18-49, indicated that a high number of married women were screened for cervical cancer compared a low number of single and widowed women who were screened [28]. Furthermore, a study conducted in India revealed that failure to have the screening done is associated with marital status since women in India are only allowed to go for a Pap smear test once they are married [30]. This is different from Namibia where all sexually active women are eligible for the test irrespective of their marital status [12].

2.5.5 Lack of awareness and knowledge

A hospital-based study conducted in India, among women of reproductive age to assess factors associated with cervical cancer screening, revealed lack of knowledge and awareness about cervical cancer prevention among the participants [30]. The study further indicated that some women felt that cervical cancer is due to unhygienic practice during menstrual cycle [30]. In Kenya, utilization of the cancer screening services was found to be directly proportional with

parity of women since those women with previous reproductive health services were more likely to seek cervical cancer screening [28].

2.5.6 Health services and health providers (institutional characteristics).

Structural factors not directly related to women can also influence cervical cancer screening [28]. Some researchers are content that these could be the main barriers to screening. Patient-nurse and other healthcare worker providers' attitudes towards women and the waiting time further influence service-seeking behaviours. In a study conducted in rural Uganda, some respondents revealed that health care providers are unfriendly and the waiting time is too long, therefore, some respondents felt that there was no need to wait the whole day at a health facility when you are not even sick [32].

2.5.7 Lack of symptoms

Lack of symptoms was found to be a factor that may inhibit cervical cancer screening in Jamaican women, where about 41% justified their reluctance to cervical cancer test due to absence of symptoms [10]. Similarly, some women in Kenya felt that "there is no point going for cervical cancer screening if you do not have any symptoms" [28][32]. People are likely to seek health care services when they are sick than going for screening services [33].

2.5.8 Fear of pain from procedure

Fear of pain from the procedure was perceived as a barrier to cervical cancer screening in different settings as found in the literature reviewed. A population survey conducted in Jamaica which included 367 participants, a majority (56.4%) of women who never had cervical cancer screening reported fear of pain as a barrier to screening compared to 38% of screened women

who rejected the factor [10]. Women from Uganda and Kenya were not different from their counterparts in this regard [32][34]. They too justified their reluctance to cervical cancer screening as due to fear of the painful procedure.

2.5.9 Disease is not a risk to me/Low perceived risk of disease

Attitudes regarding low perceived susceptibility to cervical cancer were associated with cervical cancer screening utilization. A hospital-based study conducted in India using an in-depth questionnaire to investigate factors influencing cervical cancer screening among women, revealed a significant association between low perceived risk and utilization of screening. Indian women felt that the disease is mostly for unmarried women and those with multiple sexual partners, hence the reluctance [30]. Similarly a systemic review done to assess barriers to utilization of cervical cancer screening in Sub-Saharan Africa reported that cervical cancer and the screening were associated with misconceptions such as promiscuity behaviours [34].

2.5.10 Cultural practices

Cultural practices and beliefs influence people's behaviour and attitudes in general. Reviewed literature revealed that prior researchers found an association between cultural practices and cervical cancer screening especially in most African countries where culture is a determinant for almost everything [34]. According to a qualitative study conducted in Ghana to assess men's knowledge of cervical cancer screening, some men stated that it is a taboo in Africa for a man, even a doctor to see another man's wife naked with the exception of giving birth. They further stated that it is unethical for a woman who is not sick to have her sexually organ physically inspected by someone of the opposite sex [35]. In patriarchal societies such as India where men are the sole decision-makers, cultural practices have influence in cervical cancer seeking-

behaviour. Indian women reported that they fear their spouses might think they are unfaithful if they go for screening, let alone being diagnosed with a sexually related disease [30].

5.2.11 Religious practices

In a cross-sectional study conducted in Zimbabwe to asses women's knowledge, attitudes and practices among women who attend traditional churches in Zimbabwe, about 54.4% women highlighted that they would disregard religious influence and go for cervical cancer screening if the need ever arose [36]. This finding correlates with the findings in Kenya which investigated factors associated with cervical cancer screening among women of reproductive age, where 89% of respondents stated that their religions permit them to seek cervical cancer screening and only 4% said their religions do not allow and 7% responded that they were uncertain on whether their religions allow or do not allow cervical cancer screening services [31].

5.2.12 Other factors (gender of caregiver and husband/partner reaction towards cervical cancer screening

Prior researchers have also assessed the involvement of men in cervical cancer screening services. A cross-sectional study done in Uganda and a systemic review on Sub-Saharan Africa which assessed countries' studies on barriers to cervical cancer screening revealed that women felt that cervical cancer screening was uncomfortable, especially if they are being examined my a male health care worker [32][34]. Furthermore, a qualitative study conducted in Ghana to assess Ghanaian men's knowledge and beliefs about cervical cancer risk factors and cervical cancer screenings revealed mixed feeling from respondents. Some men reported that they would allow their women to go for cervical screening while some reported otherwise. Other men indicated that they are not comfortable, especially if the test is being performed by a male

health care worker. One man was quoted as saying “Teach me the signs and symptoms and I will inspect myself [35]. This implies that there are contrasting views with regards to caregivers’ gender and men’s reaction towards cervical cancer screening services.

2.6 SUMMARY

This chapter discussed the literature review concerning the epidemiology of cervical cancer such as risk factors, preventive methods, screening services, and treatment, as well as factors associated with cervical screening non-compliances. Chapter 3 will focus on the research methodology used in the study.

CHAPTER THREE

RESEARCH METHODS

3.1 INTRODUCTION

This chapter presents the research methodology used in the study including: the research design, sampling procedure and sample size determination, study population, instrument, data collection procedure, pilot study, data analysis, measures to ensure validity and reliability and the important aspects of research ethics.

3.2 RESEARCH DESIGN

A research design is a strategic framework or plan that guides research activity to ensure that sound conclusions are reached [(37)]. It is a strategic plan for a research, setting out the broad structures and features of the research [(38)]. It addresses the techniques used in data collection, approaches in selecting samples and how data was analysed [(37)(38)].

This study employed facility-based quantitative, unmatched 1:1 case-control design. The design was preferred to allow comparison of cases (never had cervical cancer screening/pap smear test) and control (had cervical cancer screening/pap smear test) and determine association between exposure (factors) and outcome (status of cervical cancer screening). The quantitative research is a research in which data are collected or coded in numerical forms, applied to determine the significance of the findings [(38)]. Case controls are observational in nature, therefore respondents were not manipulated in any form, hence self-administered questionnaire [(37)(38)].

3.2.1 Population

Population is the complete set of persons or objects that possess some common characteristics or meet criteria that are of interest to the researcher, and to which findings are generalised [39] [37]. It is vital that a researcher defines the study populations precisely because if a failure to define the population may mean flaws in samples drawn from it [37]. The way in which the study population is defined depends on the subject matter [38].

The study population for this study were women attending Ante Natal Clinic (ANC) aged 15-49 years seeking services at Intermediate Hospital Oshakati during the period of study. This is amongst the population considered at risk of cervical cancer, therefore targeted for cervical cancer screening. Oshana region has an estimated population of 56,994 (54.43%) women of child bearing age (15-49). The researcher assessed factors among women of this age group.

3.2.2 Sampling and Sample size

Sampling is the process whereby the subject ,items or respondents are selected from the target population to ensure that selected subjects or respondents are representative of the total population [40][39]. Sample size is the mathematical process of deciding how many subjects should be studied before a study begins [41]. This study utilised a systematic sampling technique to select respondents. Systemic sampling is mainly used in quantitative research to select a probability sample where every *n-th* element of a randomly ordered list is included in the sample [37].

In this study, a case was defined as any woman aged 15-49 years, seeking services at Intermediate Hospital Oshakati, ante-natal clinic during the study time, never had a Pap smear

screening in her lifetime and consented to take part in the study. A control was defined as any woman aged 15-49 years, seeking services at IHO, ante-natal clinic during the study time, had Pap smear screening in her lifetime and consented to participate.

In this study, cases and controls were identified through self-reporting evaluation of cervical cancer screening by women themselves since this could not be verified with their health passport as most of them were new ANC health passports. All women aged 15-49 who reported to have been screened were grouped on one side and those reported that they never had cervical cancer screening in a different group. Women aged 15-49 years who reported that, they never had cervical cancer screening were classified as cases and those who reported to have been screened for cervical cancer in their lifetime were classified as controls.

Respondents were selected through the numbers they usually receive at the clinic entrance. The first respondent was selected randomly then after every 4^{th} eligible respondent was selected systematically among both case and controls. This was an ongoing process until a target sample size of 207 cases and 207 controls (n= 414) was attained.

Epi-info versions 7.2 was used to calculate the sample size. This was done by employing results from similar studies with the same topic [28]. A study conducted in Kenya (which is a developing country like Namibia) with 424 respondents revealed some results that are used to calculate the sample size for this study. The study revealed that, only 75 (17.5%) women were screened, and 350 (82%) were not screened [28]. Therefore, using power of 80% at 95% Confidence interval and odds ratio of 2.0 sample gave a total of 376 plus 10% non-response rate to give 414 respondents. Parameters used in the calculations of sample size in this study

are presented in table 3.1 below and the 17.5 percentage of controls exposed were chosen based on similar study as explained above.

Table 3.1 Parameters used for sample size calculations

Parameters	Specifications
Confidence level	95%
Power	80%
Ratio of case to controls	1:1
Percentage exposed	17.5%
Minimum detectable odds	2.0

3.2.3 Pilot study

A pilot study is the trial undertaken (before the actual study) in order to identify any problem with the data collection methods; data collection instrument; measuring the instrument to be used as well as the feasibility of the study [(40)]. In this study, the questionnaire was pre-tested for its content and face validity which involved 30 women at IHO gynaecology out-patient department, after approval was granted by MoHSS and the Oshana regional health director.

Women who participated in the pilot study were excluded from the main study. The responses from the pilot study were used to improve the clarity, reliability and relevance of the questionnaire. During the pilot study, it was found that some respondents were not familiar with the term ‘cervical cancer screening’, therefore the term ‘Pap smear’ was added to the questionnaire for clarity.

3.2.4 Data collection procedure

Data collection is "the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables the researcher to answer the stated research problem, test hypothesis and evaluate outcome" [42]. Data collection for this study took place between September and October (cervical, breast and prostate cancer awareness month) 2017 after the approval was granted from UNAM, the Ministry of Health and Social Services (MoHSS) and from the Oshana regional health directorate, respectively (annexures A, B and C). Data were collected from women of childbearing age attending Intermediate Hospital Oshakati Ante Natal Clinic (ANC). This is the Intermediate referral health facility catering to five regions (Omusati, Oshikoto, Kunene, Ohangwena and Oshana region) in northern Namibia.

Data were collected using structured questionnaires (annexure F). On a daily basis women who attended ANC at Intermediate Hospital Oshakati (IHO) during study period were approached in a professional manners. The researcher start always by introducing herself, briefed them on the study purpose, explained the method to be used and gives information on ethical principles as stipulated in the ethic section of this document. Respondents were given chances to ask questions and relevant answers were provided. Questionnaires were handed to those who consented according to their choice in terms of language (English and Oshiwambo) preferences. Special arrangement was made for those who could not read and write, but these were very few since the tool was in a local language and the study population were mostly literate given their age (15-49 years).

The researcher collected all completed questionnaires the same day and this was an ongoing process until the sample size of 414 was attained. The sample size for this study included 414 women attending ANC at IHO and was calculated based on results from similar studies with the same topic by using stat-calc in epi-info. The researcher entered data on a coded spread sheet on a daily basis.

3.2.5 Research Instrument

A self-administered structured close-ended questionnaire constructed in line with the objectives of the study and informed by literature review was used in this study. A self-administered questionnaire was appropriate to ensure that the researcher positions herself in a non-participant and distant relationship towards the subject [(40)]. The questionnaire was divided into 3 sections as follows: Section A, which addressed socio-demographic characteristics (age group, educational level, marital status, religion, residence and occupation); Section B: history of pap smear screening (main variables of interest) e.g., ever had pap smear test, had pap smear in the last 12 months and never had pap smear done as well as parity and gravidity; and Section C, probable factors affecting cervical cancer screening (exposure variables).

The Questionnaire was developed in English and then translated into Oshiwambo, the main local language used in the study area to enhance understanding during data collection. The responses were back-translated in English.

3.2.6 Data analysis

Data analysis is a practice in which raw data are ordered, organized, and summarised so that they can be described in meaningful terms in order to extract useful information [(42)]. Collected

data were verified to ensure completeness, coded, entered in an Excel (Microsoft Corporation) spread sheet, cleaned and edited for inconsistence before they were exported into EPI -info 7.2 software for analysis. The outcome variable was screened or not screened for cervical cancer and was assigned one (1) when a respondent reported to have ever been screened and zero (0) when otherwise. The socio-demographic characteristic was calculated in frequencies and percentage. Bivariate analysis to determine association between socio-demographic characteristic and screening status was done using a two by two table. Data are presented as tables.

A bivariate analysis was used to determine the association between dependent variable (cervical cancer screening) and independent variables (factors). Odds (95% CI) was calculated as a measure of association. Finally, a multivariate logistic regression model was performed by including all significant socio-demographic and perceived factors found in bivariate analysis to control for possible confounding using Epi-info 7.2 software. The level of significance was determined by factors with the *p.value* less than at *0.05* at 95% confidence interval [(27).]

3.3. RESEARCH ETHICS

Ethics in research refers to the codes of moral principles that call for respect and protection of the rights of research subjects by researcher [(42)]. According to the world medical assembly declaration of Helsinki,1964, all research involving human subject must conform to the accepted scientific ethical principle that promote respect for human being, protection of human right, privacy and dignity [(43)]. In this study the researcher observed the following ethical principles: principles of justice, autonomy, anonymity, non-maleficence and beneficence as well as confidentiality and privacy [(43)(44)]. They are discussed below.

3.3.1 Permission to conduct research

This study was approved by the research ethical committee of the Post Graduate Studies of the University of Namibia (UNAM) (annexure A), as well as the Ministry of Health and Social Services (annexure B). Both copies of the two approval letters were forwarded to the Oshana regional health directorate management team which granted final permission before data collection commenced (annexure C). Participating in the study was voluntary and respondents provided written informed consent only after the aims of the study, benefits and potential risk were explained to them.

3.3.2 Informed consent

A written informed consent was sought and obtained from women and guardians/parents of girls younger than 18 years old. This was done to ensure that respondents were informed about the purpose and objectives as stipulated in the respondent information form (annexure D). The resecher also made available the contact information of research supervisors (Annexure D).

3.3.3 Autonomy

Autonomy is "the ethical principle which entails self-determination or the right of persons to independent decision-making without undue influence or coercion" [45]. Respondents were informed that they could refuse or withdraw from the study at any stage of the study, if they wished to do so, without penalty or prejudice.

3.3.4 Beneficence

Beneficence is “an obligation to minimize harm, discomfort and maximize possible benefits” [(21)] .The researcher has an obligation to secure the well-being of research participants [(45)(42)]. In this study respondents were informed that there is no direct or individual benefit from the study, but it is anticipated that findings will be made available to the MOHSS in order to improve the programme where necessary.

3.3.5 Non-maleficence

Non-maleficence is ”intentionally refraining from actions which can cause harm” [(45)]. Respondents were informed that, there will be no risk on their side, since their identities were not revealed, therefore no harm was inflicted to respondents.

3.3.6 Principle of justice

Justice entails the respondent’s right to fair treatment [(40)]. In this study, respondents’ recruitment was free from coercion or favouritism. Selection was based on the research problem and not because respondents could easily be manipulated in any way. The researcher provided contact details of the study supervisors.

3.3.7 Confidentiality

Confidentiality is “an undertaking by the researcher to protect the anonymity of research participants” [(37)(45)]. Confidentiality was preserved throughout the study, since no respondent’s name was linked to the data. Data were stored in the researcher’s personal computer for analysis and the computer was locked with a secret code only known to the researcher**.**

3.3.8 Anonymity

Anonymity implies that the researcher does not record the identifying details of participants on any research records, thus the participant is not identifiable or traceable after the study [37]. Anonymity is more than confidentiality, since respondents' identities remain unknown even by the researcher. Anonymity was ensured in this study since no respondent name was entered in the questionnaire and computer respectively; serial codes were used instead.

3.4 MEASURES TO ENSURE RELIABILITY AND VALIDITY

3.4.1 Reliability

Reliability is "the extent to which instrument yields the same results on repeated trials" [37]. In this study, reliability was assessed during the pilot study. Results of the pilot study confirmed that the instrument could provide valid and reliable results.

3.4.2 Validity

Validity refers to "the ability of the instrument to measure what it is intended to measure" [16] [37] [46]. In this study, the validity of the questionnaire was based on subject experts and pilot test. The questionnaire was examined by a panel of experts from the University of Namibia Institutional Review Board (IRB), research supervisors, as well as subject experts from IHO gynaecology clinic and family health department, and appropriate changes were made as recommended. A nurse from family health department recommended that sex be removed from demographic status since all the respondents were women, and the change was made accordingly.

3.5 SUMMARY

This chapter is a description of how the study was carried out. It has provided a brief description of the study design, population, sampling method and sample size determination, pilot study, and study instrument. Moreover, the chapter explained the procedure that was used to collect data and analysis, and ethical considerations as well as measures to ensure validity and reliability were discussed. The next chapter presents the main findings of the study.

CHAPTER 4

RESULTS OF THE STUDY

4.1 INTRODUCTION

This chapter presents characteristics of respondents, main results and analysis of the research findings. Data were analysed descriptively and analytically in terms of the study objectives. The two by two analysis was used to determine association between socio-demographic characteristics and cervical cancer screening. The analytical analysis utilized bivariate and multivariate analysis using Epi-info 7.2 to obtain the odds ratio to evaluate the relationship between exposure (factor) and outcome (cervical cancer screening) and the level of significance was determined by factors with the *P.value* less than at *0.05* at 95% confidence interval [(27)]. Results of the structured questionnaire will be presented according to the sections in the data collection tool as follows:

- Demographic characteristics of respondents (religion, age-group, marital status, educational level, residence and occupational status).
- Socio-demographic determinants of cervical cancer screening among cases and controls
- Probable factors affecting cervical cancer screening.

The last part of this section presents analysis of logistic regression adjusted for possible confounding on all factors that were found to be statistically significant in a bivariate analysis.

Table 4.1 Socio-demographic characteristics of study respondents (cases and controls), Intermediate Hospital Oshakati, September-October 2017. (N=414)

Characteristics	Respondents (n=414) No. (%)	Cases (n=207) No. (%)	Controls (n=207) No. (%)
Age group (Years)			
15-19	33 (7.97)	29 (14.01)	4 (1.93)
20-29	185 (44.69)	131 (63.29)	54 (26.09)
30-39	150 (36.23)	43 (20.77)	107 (51.69)
40-49	46 (11.11)	4(1.93)	42 (20.29)
Marital status			
Single	284 (68.60)	165 (79.71)	119 (57.49)
Married	91 (21.98)	24 (11.59)	67 (32.36)
Cohabiting	32 (7.73)	17 (8.21)	15 (7.24)
Separated	2 (0.48)	0 (0.00)	2 (0.97)
Widowed	2 (0.48)	0 (0.00)	2 (0.97)
Separated	3 (0.72)	1 (0.48)	2 (0.97)
Religious			
Christian	396 (95.65)	196 (94.69)	200 (96.62)
Others	18 (4.34)	11 (5.31)	7 (3.38)
Educational Level			
Primary	102 (24.64)	62 (29.95)	40 (19.32)
Secondary	259 (62.56)	116 (56.04)	143 (69.08)

Tertiary	49 (11.84)	26 (12.56)	23 (11.11)
No Education	4 (0.97))	3 (1.45)	1 (0.48)
Residential			
Urban	231 (55.80)	120 (57.97)	111 (53.62)
Rural	183 (44.20)	87 (42.03)	96 (46.38)
Employment status			
Yes	142 (34.30)	47 (22.71)	95 (45.89)
No	232 (56.04)	132 (63.77)	100 (48.31)
Students	40 (9.66)	28 (13.53)	12 (5.80)

In this study, respondents were grouped in four age group of 15-19 years, 20-29 years, 30-39 years and 40-49 years. The majority 107 (51.69%) of controls respondents were women in the age group 30-39 years, compared to 43 (20.77%) cases in the same age-group. The highest number 131 (63.29%) of cases (non-screened women) were in the age group 20-29 (even though overall this was the age group with the highest respondents 185 (44.68%) and only 54 (26.09%) were controls in the same age group).

Majority 396 (95.65%) cases and 196 (94.69%) controls were Christian and the rest belonged to other religions. On marital status, more 165 (79.71%) controls were single compared to 284 (68.60%) cases who were single. The majority 67 (32.36%) controls were married compared to 24 (11.59%) cases who were married.

In this study, educational levels were grouped into 4 categories: Primary, Secondary, Tertiary and no formal education. Out of 207 controls respondents, the majority 143 (69.08%) had at

least acquired a secondary education. The majority 132 (63.77%) of cases were unemployed as compared to 100 (48.31%) controls who were employed , while the rest 28 (13.53%) cases and 12 (5.80%) controls were students.

4.2 ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC CHARACTERISTICS AND CERVICAL CANCER SCREENING

Results for a two by two analysis to determine the association between socio-demographic status and cervical cancer screening are presented in Table 4.2 below. Data are presented as frequencies (n), percentage (%), odds ratio (OR), asterisk (*) indicating variables used as reference category for each group with more than 3 variables and 95% Confidence Interval (95% CI).

Table. 4.2 Socio-demographic determinants of cervical cancer screening among cases and controls, Intermediate Hospital Oshakati, September-October 2017 (n=414).

Factors	**Cases (n=207) No. (%)**	**Controls (n=207) No. (%)**	**OR**	**95%CI**
Age group				
15-19	29 (14.01)	4 (1.93)	0.01	0.03 - 0.05
20-29	131 (63.29)	54 (26.09)	0.04	**0.01 - 0.11**
30-39	43 (20.77)	107 (51.69)	0.24	**0.08 – 0.70**
*40-49	4 (1.93)	42 (20.29)	1.00	
Marital status				

*Single	165 (79.71)	119 (57.49)	1.00	
Married	24 (11.59)	67 (32.37)	3.87	**2.30 – 6.53**
Others	18 (8.69)	21 (10.14)	1.62	0.83 - 3.17
Religious				
Christians	196 (94.69)	200 (96.62)	1.00	
Others	11 (5.31)	7 (3.38)	0.62	0.24 – 1.64
Educational Level				
*Primary	65 (31.40)	41 (19.80)	1.00	
Secondary	116 (56.04)	143 (69.08)	1.95	**1.23 – 3.10**
Tertiary	26 (12.56)	23 (11.11)	1.40	0.71 – 2.78
Residential				
Urban	120 (57.97)	111 (53.62)	1.00	
Rural	87 (42.03)	96 (46.38)	1.19	0.81 – 1.76
Employment status				
*Yes	47 (22.71)	95 (45.89)	1.00	
No	132 (63.77)	100 (48.31)	0.37	**0.83-0.58**
Students	28 (13.53)	12 (5.80)	0.21	**0.10 – 0.45**

Values in bold are statistically significant 95% Confidence Interval do not include one (1)

OR= Odds ratio and the asterisk (*) indicates variables used as reference category.

Using variables marked with an asterisk (*) in table 4.2 as a reference and the rest of the variables were related to the rerefences the following demographic characteristic were found to be significantly associated with cervical cancer screening seeking behaviors: age group 20-29 (OR= 0.04, 95% CI: 0.01 - 0.11), age group 30-39 (OR= 0.3, 95% CI:0.08 - 0.70), married (OR=3.87, (95% CI: 2.30 – 6.53), having secondary education (OR= 1.95, 95% CI: 1.23 – 3.10), employment (OR=0.37, (95% CI: 0.83-0.58) and being a student (OR= 0.21, 95% CI: 0.01 - 0.045). All socio-demographic factors that were statistically significant in bivariate analysis were controlled for potential confounding variables in multivariate analysis with *P-value* <0.05 and results are presented in Table 4.4 using Logistic Regression statistic.

4.3 ASSOCIATION BETWEEN CERVICAL CANCER SCREENING AND PERCEIVED FACTORS.

Bivariate analysis results for perceived barriers to screening are presented in Table 4.2 below. Data are presented in frequencies (n), and percentage (%), Crude Odds ratio (COR) are indicated at 95% confidence intervals (95% CI) and probability (*P-value*). Factors are presented according to the way they appeared in the data collection tool.

Table 4.3: Distribution of respondents according to Cervical Cancer screening status (cases and controls) and perceived barriers, Intermediate Hospital, Oshakati, September-October, 2017

Exposure variable	Cases (n=207) No. (%)	Controls(n=207) No. (%)	Total	COR	95%CI	P.value
Fear test will reveal cervical cancer						
Yes	134 (64.73)	85 (41.06)	219			
No	73 (35.27)	122 (58.94)	195	2.63	1.77-3.92	**0.001***
Test is embarrassing						
Yes	115 (55.56)	90 (43.48)	205			
No	92 (44.44)	117 (56.52)	209			
				1.62	1.10-2.40	**0.014***
I have no knowledge about screening						
Yes	88 (42.51)	67 (32.37)	155			
No	119 (57.49)	140 (67.63)	259			
				1.54	1.03-2.31	0.332
Religious practice						
Yes	40 (19.32)	52 (25.12)	92			
No	167 (80.68)	155 (74.88)	322	0.71	0.45-1.14	0.156

Disease is not a risk to me						
Yes	120 (57.97)	73 (35.27)	198			
No	87 (42.03)	134 (64.73)	221	2.53	1.70-3.77	**0.003***
I have no signs and symptoms						
Yes	126 (60.87)	69 (33.33)	195			
No	81 (39.13)	138 (66.67)	219	3.11	2.08-4.65	**0.001***
Cultural practice						
Yes	33 (15.94)	34 (16.43)	67			
No	174 (84.06)	173 (83.57)	347			
				0.97	0.57-1.63	0.381
Health facilities are far						
Yes	36 (17.39)	43 (20.77)	79			
No	171 (82.61)	164 (79.23)	335	0.80	0.49-1.31	0.381
No Transport Money						
Yes	50 (24.15)	39 (18.84)	89			
No	157 (75.85)	168 (81.16)	325			
				1.37	0.86-2.20	0.189
Not willing to take a test						

Yes	53 (25.60)	48 (23.19)	101			
No	154 (74.40)	159 (76.81)	313	1.14	0.73-1.79	0.567
Screening is important						
Yes	41 (19.81)	53 (25.60)	94			
No	166 (80.19)	154 (74.40)	320	0.72	0.45-1.14	0.159
Fear of Pain from procedure						
Yes	139 (67.15)	60 (28.99)	199			
No	68 (32.85)	147 (71.01)	215	5.01	3.30-7.60	**0.001***
Health care worker's negative attitudes						
Yes	39 (18.84)	47 (22.71)	86			
No	168 (81.16)	160 (77.29)	320			
				0.80	0.50-1.27	0.332
My partner may say I am unfaithful						
Yes	25 (12.08)	20 (9.66)	45			
No	182 (87.92)	187 (90.34)	369	1.28	0.69-2.40	0.429
Gender of care giver						
Yes	56 (27.05)	61 (29.47)	117			

No	151 (72.95)	146 (70.53)	297	0.89	0.58-1.36	0.585
Parity (hasChildren)						
Yes	126 (60.87)	194 (93.72)	320			
No	81 (39.13)	13 (6.28)	94	9.59	5.12-17.97	**0.001***

*Values in bold and * are statistically significant at P-value < 0.05 95 % Confidence Interval, COR= Crude Odds Ratio.*

Table 4. 3 above shows the bivariate analysis between dependent variables of cervical cancer screening and independent variables of perceived factors. The analysis revealed fear of a positive outcome as a result of screening (COR= 0.38, 95% CI: 0.25 - 0.56, *P-value*= 0.001), fear of pain from the procedure (COR= 0.20, 95% CI: 0.13 - 0.30, *P-value*= 0.001), lack of signs and symptoms of the disease (COR= 0.32, 95% CI: 0.22 - 0.48, *P-value*- 0.001), low perceived risk of the disease (COR= 0.39, 95% CI: 0.27 - 0.59, *P-value*= 0.003), test is embarrassing (COR= 0.63, 95% CI: 0.42 - 0.91, P-*value*= 0.014) and having children (COR 9.59, 95% CI:5.12 - 17.97, P-value= 0.001) were statistically significant.

All factors that were statistically significant in bivariate analysis were controlled for potential confounding variables in multivariate analysis with *P-value* <0.05 and results are presented in Table 4.4 below using Logistic Regression statistic.

4.4. LOGISTIC REGRESSION OF PERCEIVED AND SOCIO-DEMOGRAPHIC FACTORS AND CERVICAL CANCER SCREENING

Results of a multiple logistic regression analysis for independent variables and cervical cancer screening that were statistically significant in bivariate analysis using the p-value less than 0.05

adjusted for potential confounders. Data are presented in Adjusted Odds ratio (AOR) indicated at 95% confidence intervals and probability (*P-value).*

Table: 4.4 multiple logistic regression adjusted for potential confounders on significant factors, Intermediate Hospital Oshakati, September-October 2017.

Perceived Factors	**Case (n=207) No. (%)**	**Controls(n=207) No. (%)**	**AOR**	**95% CI**	**P-value**
Fear screening will reveal cervical cancer					
Yes	134 (64.73)	85 (41.06)			
No	73 (35.27)	122 (58.94)	0.54	0.34-0.85	**0.008***
I have no signs and symptoms					
Yes	126 (60.87)	69 (33.33)			
No	81 (39.13)	138 (66.67)	0.41	0.26-0.64	**0.001***
Fear of pain from procedure					
Yes	139 (67.15)	60 (29.47)			
No	68 (32.85)	146 (70.53)	0.23	0.15-0.37	**0.001***
Disease is not a risk to me					
Yes	120 (57.97)	73 (35.27)	0.54	0.34-0.85	**0.007***
No	87 (42.03)	134 (64.73)			

Test is embarrassing					
Yes	115 (55.56)	90 (43.48			
No	92 (44.44)	117 (56.52)	1.42	0.88 - 2.29	1.523
Parity (has children)					
Yes	126 (60.87)	194 (93.72)			
no	81 (39.13)	13 (6.28)	4.50	2.25-9.02	**0.001***
Age-group 20-29	29 (14.01)	4 (1.93)	1.56	0.48-5.09	0.452
Age-group 30-39	43 (20.77)	102 (51.69)	6.71	1.94-23.28	**0.001***
Secondary education	116 (56.04)	143 (69.08))	8.75	4.63-11.92	**0.018***
Students	28 (13.53)	12 (5.80)	0.63	0.27–1.49	0.294
Married	24 (11.56)	67 (32.37)	1.66	1.40-3.11	**0.001***
Employment status					
yes	47 (22.71)	95 (45.89)			
No	132 (63.77)	100 (48.31)	1.33	0.06-3.19	0.527

Values in Bold and asterisk are statistically significant at P-value <0.05 at 95% CI. AOR=Adjusted Odds Ratio.

Multiple logistic regression was carried out to determine the most significant factors and alleviate the effects of confounders. After controlling for potential confounders, factors that were found to be the most statistically significant were: fear that screening will reveal cervical cancer (AOR= 0.54, 95% CI:0.34 - 0.85, *P-value*= 0.008), fear of pain from the procedure (AOR= 0.23, 95% CI:0.15 - 0.64, *P-value*= 0.001), lack of signs and symptoms of the disease (AOR= 0.41, 95% CI:0.26 - 0.64, *P-value*= 0.001), low perceived risk of the disease (AOR= 0.54, 95% CI: 0.34 - 0.85, *P-value*= 0.007). In this study logistic regression analysis shows that

embarrassment (AOR= 1.42, 95% CI: 0.88 - 2.29, *P-value*= 1.523.) was not statistically significant as it was initially found by bivariate analysis.

Demographic profile that were significant in logistic regression were, age 30-39 (AOR= 6.71, 95% CI:1.94 - 23.28, P-value= 0.001), having secondary education (AOR= 8.39, 95% CI: 4.63 - 11.92, P-value= 0.018) and married (AOR= 1.66, 95% CI: 1.40 - 3.11, P-value= 0.001). However, employment (AOR= 1.33, 95% CI: 0.06 - 3.19 ,P-Value= 0.527) and being a student (AOR= 0.63,95% CI: .27 – 1.49 , P-value= 0.294) were not significantly associated with cervical cancer screening after controlling for potential confounding.

4.5 SUMMARY

The findings of the study are presented in this chapter with particular emphasis on the association between demographic characteristics of women, factors associated with cervical cancer and cervical cancer screening among cases (non-screened) and controls (screened). Results are presented in tables. The next chapter presents a discussion of results.

CHAPTER 5

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter focuses on discussions and interpretations of the main findings of the study based on stated study objectives. The interpretation of these findings will be discussed in relationship between this study and previous studies done by other researchers in different settings, and researchers' own perspectives are also included. Significance and conclusions are drawn in context with study objectives, and recommendations are formulated in relation to the context of the findings which will include recommendations for future research. Limitations of the study will also be described.

5.2 DISCUSSIONS OF THE STUDY FINDINGS

5.2.1 Socio-demographic characteristics of respondents

The study revealed that greater propotion 131 (63.29%) of cases (non-screened women) were in the age group 20-29 [even though overall this was the age group with the highest respondents 185 (44.68%)], only 54 (26.09%) were controls in the same age group). Chritians constituted the greater number of respondents among both cases and controls table 4.1. The high number of Christian respondents in this study could be attributed to the fact that according to the Namibian constitution, Namibia is a secular state-freedom of religion, and more than 90% of Namibian populations are Christian and the remaining 10% belong to minority religious groups [47]. It is also worth noting here that most of the literature reviewed by this researcher did not include religion in their socio-demographic profile variables.

This high unemployment rate could be associated with the current high unemployment rate in the country at the time of the study, as attributing it to screening-seeking behaviour may mean bias in reporting. According to the Namibian Statistics Agency (NSA) population census for 2011, about 42% employable Namibians were unemployed in the country [48].The study also revealed that about 231 (55.80%) of the respondents reside in rural areas and the rest are urban residents. The Namibian Statistics Agency census for 2011 indicated that 54% of the population in Oshana region reside in rural areas and the remaining 46% are urban dwellers (48). The majority of controls 111 (53%) lived in urban areas and 96 (46.3%) cases reside in rural areas.

5.2.2 Socio-demographic characteristics determinants of respondents

Giberg-Andersen behavioural model for vulnerable population to predict health service utilization, classified age among the predisposing and need factors that have significant effect on preventive health care services utilization [49][50]. In this study women in the age group 30-39 were more likely to be screened when compared to those in the age group of 20-29 years and 15-19 years respectively. Among youthful respondents in the age group 15-19 a greater propotion 87.88% were cases compared to 12.12% controls in the same age group. Therefore, cases were significantly younger than controls (AOR= 3.10, 95% CI: 1.41 - 9.23). A cross-sectional study conducted in Sourth-Eastern Nigeria using Anderson's model of health services utilization to investigate the use of services by adolescent girls showed that, age predicted the odds of adolescent using reproductive health services [51]. Similarly, this study revealed that age is determinant for receipt of cervical cancer screening services.

Findings from the current study analysis could mean that women in the age group of 30-39 years were more likely to have had cervical cancer screening (AOR=6.71,95% CI: 1.94 -23. 28) than women in the younger age group of 20-29 years (AOR= 1.56, 95% CI: 0.48-5.09) and 15-19 (OR= 0.01,95% CI: 0.03 - 0.05), respectively using age group 40-49 years as a reference category (OR= 1.00). An explanation to this may be that women in the younger age groups may think that they are not at risk of cervical .This may lead to women in the youthful group presenting with the condition in late-stage which is associated with high mortality rate.

Prior researchers have found that age was a significant determinant for receipt of cervical cancer screening services [30]. In similar studies conducted in India and Zimbabwe the mean age of screened women was 35 and 38 years respectively [30][36]. The observed difference between the current study and the two studies (Zimbabwe and India) is the manner in which women's age were classified since the latter analysed with mean age, and the current study used age groups.

In this study more respondents were single when compared to other marital status. According to the 2011 Namibia population and housing census, 67% of people eligible to be married were never married [48]. The high number of single respondents can be attributed to the country's general marital status. However, when married respondents where further analysed and compared between cases and controls, a majority 67 (32.36%) of married women were controls when compared to 24 (11.59%) married cases. Further analysis in multiple logistic regression shows that married women were more likely to be screened (AOR=1.66, 95% CI:1.40-3.11) when compared to other marital status (OR= 1.62, 95% CI: 0.83 - 3.17) using single women as a reference category (OR= 1.00). As shown in table 4.1, cases had a greater proportion 165 (79.71%) compared to 119 (57.49%) controls. This may mean that married women have greater

understanding of preventive care services compared to unmarried women or that they are likely to have children and they might have received information about cervical cancer screening during obstetric care service.

Findings from literature are that marriage is associated with cervical cancer screening; for instance, findings from a cross-sectional study with 424 participants conducted in Kenya to investigate determinants of cervical cancer screening among women of reproductive age 18-49, indicated that a high number of married women were screened for cervical cancer when compared to single and widowed women [28]. Furthermore, a study conducted in India revealed that failure to take the screening was associated with marital status since women in India are only allowed to go for a Pap smear test once they are married [30]. This is different from Namibia where all sexually active women are eligible for the test irrespective of their marital status [12].

The study found a positive association between secondary education and cervical cancer screening attendance.The logistic regression analysis revealed that having secondary education was significantly associated with cervical cancer seeking behaviours (AOR= 8.75, 95% CI: 4.63-11.92). The reason for women with secondary education level to be screened when compared to those with low or no education at all (table 4.2) might be related to poor understanding of screening services or due to other factors other than this. This is similar to a study conducted in Jamaica which found strong associations between high levels of education and increased cervical cancer screening [10]. In countries such as India, women believed that cervical cancer screening is meant for the learnt and well-off women and that women who are educated are more likely to seek health care services compared to their counterparts with low levels of education [30][36]. However, while education was found to be a predictor for cervical cancer screening in India and Jamaica as per literature, education was not statistically

significant for cervical cancer screening in Switzerland (52) Swiss women with high levels of education were less likely to undergo cervical cancer screening when compared to their counterparts with low levels of education (52). Interestingly in the current study, out of 207 cases 116 (56.04%) had received secondary education.

Using employed (OR= 1.00) as a reference category students were less likely to be screened (AOR= 0.63, 95% CI: 0.27 - 1.49) when compared to both employed and unemployed women (AOR= 1.33, 95% CI: 0.06 - 3.19). The analysis did not find any statistically significance between being a rural area residence and those who reside in urban table 4.2.

5.2.3 Cervical cancer screening and perceived barriers

This study examined the association of the dependent variable of cervical cancer screening with independent variables of fear that screening will reveal cervical cancer, screening is too embarrassing, lack of signs and symptoms of the disease, low perceived risk of the disease by individuals, religious practices, cultural practices, physical distance to health facilities, lack of transport money, not willing to take a test, screening is not important, fear of pain from the procedure, health care workers' negative attitudes and fear of partners/husbands' reactions towards the cervical cancer screening services.

The bivariate analysis revealed that fear that screening will reveal cervical cancer, fear of pain from the procedure, lack of signs and symptoms of the disease, low perceived risk of the disease by individuals and that the test is embarrassing, were statistically significantly associated with the dependent variables of cervical cancer screening among studied groups at *P.value* <0.05 at 95% confidence interval and the rest of the factors were not significantly associated with cervical cancer screening, Table 4.3 and 4.4.

5.2.3.1 Fear that screening will reveal cervical cancer

Based on the findings, there is a significant association between cervical cancer screening and fear of test outcome (AOR= 0.54, 95% CI: 0.34 - 0.85). Out of 207 cases respondents, 134 (64.73%) reported that they feared that the test will reveal cervical cancer and the rest reported otherwise. According to a systemic review of Sub-Saharan African countries studies on barriers to utilization of cervical cancer screening, women believed that the disease in incurable and diagnosis would mean unavoidable death, hence respondents saw no benefit in screening when positive outcome has no cure [(40)]. Dissimilar to this finding was in Switzerland where perceived severity of the disease encourages women to use screening services (52).

5.2.3.2 Test is too embarrassing

Even though this factor was detailed in many studies as being significantly associated with cervical cancer screening, in this study embarrassment was found to be significant (COR= 1.62, 95% CI: 1.10 - 2.40) in bivariate analysis. However, the multiple logistic regression which was meant to determine the most significant factors and alleviate the effect of potential confounders did not find any association between embarrassment and cervical cancer screening (AOR =1.42, 95% CI: 0.88 - 2.29**)**. A study conducted in Jamaica 76% of women indicated that cervical screening is too embarrassing [(10)]. Similarly, women from Uganda and Kenya are not different from their Jamaican counterparts in this regard [(31)(32)]. The bivariate analysis found an association between cervical cancer screening and embarrassment. However, a further statistical analysis using logistic regression did not find an association. Therefore, in the current study it can be concluded that there is no statistical significant association between cervical cancer screening and embarrassment.

5.2.3.3 Fear of pain from procedure

Findings from this study revealed that fear of pain due to the cervical cancer screening procedure was statistically significant (AOR= 0.23, 95% CI: 0.15 - 0.37). The majority of cases 139 (67.15%) reported that they feared pain due to the procedure, compared to 60 (28.99%) controls who reported that the test was painful. Correlating with this finding in a study conducted in Jamaica, were about 56.4% of women who never had cervical cancer screening and reported that the fear of pain was a barrier to screening compared to 38% of screened women who rejected the factor [(10)].

Women from Uganda and Kenya were not different from their counterparts in this regard [(32)] [(34)].Fear of pain and cervical cancer screening were found to be statistically significant in this study. Overall from the current study, fear of pain from the procedure was mostly reported than all other perceived factors. A situation which calls for attention to clarify the perception which could be associated with lack of knowledge about the screening procedure.

5.2.3.4 Disease is not a risk to me

Attitudes regarding low perceived susceptibility to cervical cancer were also found to be associated with cervical cancer screening utilization in the current study (AOR= 0.54, 95% CI:0.34 - 0.85). Out of 207 cases respondents 120 (57.97%) revealed that the disease was not a risk to them. Compared to 73 (35.27%) controls who perceived that they have low risk of cervical cancer. A significant association between low perceived risk and the utilization of screening was also reported in a study conducted in India, where women felt that the disease is mostly for unmarried women and those with multiple sexual partners, hence the reluctance [(30)].

5.2.3.5 Lack of signs and symptoms of the disease.

The study did find a statistical significance association between cervical cancer screening and lack of signs and symptoms of cervical cancer (AOR= 0.41, 95% CI: 0.26 - 0.64). The majority of cases respondents 126 (60.87%) reported lack of disease symptoms was a barrier to screening, and the rest 81 (39.13%) reported otherwise.

Correlating with this finding are similar studies conducted in Kenya, Zimbabwe and Jamaica respectively, which found that lack of disease symptoms inhibited cervical cancer screening. About 41% Jamaican and 89.71% Zimbabwean women justified and acknowledged their reluctance to cervical cancer test to absence of symptoms [(10)(36)]. Similarly, some Kenyan women felt that there was no point of going for cervical cancer screening if you did not have any symptoms [(28)]. This can be attributed to the fact that people are likely to seek health care services when they are sick than going for preventive health care services.

5.2.3.6 Lack of transport money and physical distance to the health facilities.

Another point worth discussing in the findings of this study is cost of screening and associated costs, even though they were not statistically significant (OR= 1.37, 95% CI: 0.86 - 2.20). Out of 414 respondents, only 50 (24.15%) cases and 36 (17.39%) controls reported cost of screening and associated costs such as transport money to access health facilities as barriers to seeking cervical cancer screening; a contradictory finding compared to findings in other studies. Literature indicated lack of transport money and out-of-ocket non-emergency hospital fees as factors inhibiting accessibility to screening [(34)].

In a study conducted in India for instance, women stated that asking for money for transport and hospital fees from husbands may raise conflict as the husband might think the woman is

unfaithful to him [30]. This discordance in findings may be attributed to the fact that in Namibia, cervical cancer is provided free of charge and the service is available in most local clinics [12].

5.2.3.7 Lack of Knowledge and awareness about cervical screening

For any health project to be successful, awareness creation about the project enhances the utilization of services. The current study found that the majority 119 (57.49%) of case reported they have knowledge about cervical cancer screening services and only 67 (32.37%) cases reported to have lack of knowledge and awareness about the cervical screening services. This indicates that quite a number of non-screened women are aware of the screening despite non-utilization of the service. This result also correlates with findings in a Ugandan study which investigated factors associated with cervical cancer screening among rural women, where about 51.1% of non-screened women reported to have knowledge and awareness of service availability [32].

The increase in number of cases with knowledge and awareness about cervical cancer screening could be attributed to the perception such as that knowledge may not necessarily mean practice or utilization as humans' personal attitudes and behaviours influence their actions. Contrary to this is a finding from India, where women reported that they lacked knowledge and awareness about the availability of cervical cancer screening compared to other preventive services. Some women felt that cervical cancer was due to unhygienic practices during the menstrual cycle.

This too clearly depicts that women lack knowledge of the disease's natural history which may lead to non-compliances to screening. One woman was quoted as saying. "There are no awareness campaign programs regarding disease [cervical cancer] prevention similar to

effective and enthusiastic campaigns against the HIV/AIDS, malaria and tuberculosis" [30]. Moreover, the statistical analysis in the current study did not find a significant association between cervical cancer screening and lack of knowledge and awareness (OR= 1.54, 95% CI; 1.03 - 2.31, P-value= 0.332).

5.2.3.8 Cultural practices

The current study investigated the association between respondents' cultural practices against cervical cancer screening. The finding reveals that cultural practices of respondents did not significantly affect whether or not respondents received cervical cancer screening among both cases and controls (OR= 0.97, 95% CI:0.57 - 1.63). Only 33 (15.94%) cases stated that culture was the reason they did not seek cervical cancer screening, and the majority of cases 175 (84.06%) reported that culture was not the reason they did not seek cervical cancer screening services.

Interesting findings in culture that are worth noting is percentage differences between cases and controls which could be either by chance or true association in their reporting. Among controls 34 (16.43%) reported that culture had influence in screening seeking behaviour and 173 (83.57%) controls stated that culture was not a reason for non-screening. Probably one reason could be that respondents were from the same cultural domain. Contrary to this is findings from literature, where prior researchers have found that cervical cancer screening and culture are associated.

A systemic review for eight Sub-Saharan African countries conducted on barriers to utilization of cervical cancer revealed that culture was associated with cervical cancer screening [36] .A

qualitative study conducted in Ghana to asses men's knowledge about cervical cancer screening, some men stated that it is a taboo in Africa for a man, even a doctor, to see another man's wife naked with the exception of giving birth, and they further stated that for a woman who is not sick to have her sexual organ physically inspected by someone of the opposite sex was unethical [35].

5.2.3.9 Religious practices

This study did not find any association between respondents' religious practices and cervical cancer screening (OR= 0.71, 95% CI:0.45 - 1.14). A majority of cases 167 (80.68%) reported that religious practices were not a barrier to cervical cancer screening and only 40 (19.32%) of cases reported otherwise. Among controls respondents 155 (74.12%) stated that religious practices had no influence in screening seeking behaviour and 52 (25.12%) controls stated that religious practices were hindrance to cervical cancer. This could be due to the fact that the majority 396 (95.65%) of respondents in the current study belonged to one religious domain of Christians and the rest belonged to other domains as observed in univariate analysis Table 4.1.

This finding correlates with the findings in Kenya which investigated factors associated with cervical cancer screening among women of reproductive age, where 89% of respondents stated that, their religions permit them to seek cervical cancer screening and only 4% said their religions do not allow screening and 7% showed that they were uncertain on whether their religion allows or does not allow cervical cancer screening services [31]. In a cross-sectional study conducted in Zimbabwe to asses women's knowledge, attitudes and practices among women who attend traditional churches in Zimbabwe, about 54.4% women highlighted that

they would disregard religious influence and go for cervical cancer screening if the need ever arose [36].

5.2.3.10 Health care workers' negative attitudes

This study also investigated health care workers' negative attitudes as reported in literature in association with cervical cancer screening. Findings from the bivariate analysis for the current study revealed a non-significant association between cervical cancer screening and negative attitudes of health care workers (OR= 0.80, 95% CI: 0.50 - 1.27). The majority of respondents 168 (81.16%) cases reported health care workers' negative attitudes were not the reason they did not undergo cervical cancer screening as compared to 39 (18.84%) who stated otherwise. Contrary to this are findings from other studies where women stated that negative attitudes of nurses discourage women from screening services [32][34]. In one of the studies a woman was quoted as saying "Health care providers behave rudely, if I am having money they give better response and time to you otherwise not" [30].

5.2.3.11 Gender of care giver

The health care worker's gender was also found to be non-significant in the current study (OR= 0.89, 95% CI:0.58 - 1.36). A majority of women 151 (72.95%) cases reported that the gender of care givers was not the reason they were not screened for cervical cancer as compared to 56 (27.05%) who stated that the care giver's gender influenced their cervical cancer screening behaviours. According to literature findings, the care giver's gender hinders women from screening services. A systemic review on Sub-Saharan Africa which assessed 8 countries' studies and a cross-sectional study done in Uganda to assess barriers to cervical cancer screening revealed that women felt that cervical cancer screening was uncomfortable, especially if they are being examined by a male health care worker [32][34]. This could be

explained considering the fact that in general women are very conservative about exposing their private parts, let alone to an opposite sex.

5.2.3.12 Fear of husband/partner's reaction towards cervical cancer screening

The World Health Organization (WHO) recommends involving men in women's reproductive health including preventive health care services [6] .Therefore partners' beliefs towards cervical cancer screening was also investigated in this study. Moreover, there was no significant association found between cervical cancer screening and fear of partner's reaction towards the screening (OR= 1.28, 95% CI 0.69 - 2.46).

Among cases respondents, a majority of cases 182 (87.92%) reported that partners' reactions towards screening was not a reason for their non-screening and only 25 (12.08%) stated otherwise. Mixed findings were reported in a qualitative study conducted in West Africa to assess Ghanaian men's knowledge and beliefs about cervical cancer risk factors and cervical cancer screening. Even though the study indicated that a majority of the participants have never heard of the disease and the screening itself, those who were aware, shared mixed feeling. Some men said they would encourage their partners to go for screening. One man was quoted as saying "yes I am a married man, so l would want especially for my wife to get screened so she does not in the future get cervical cancer" [35]. Other men indicated that they were not comfortable, especially if the test is performed by a male health care worker. Another man was quoted as saying "Teach me the signs and symptoms and I will inspect [her] my-self"[35]. These responses imply that men too have mixed feeling towards the services.

5.2.3.13 Other factors (not willing to take a test and test is not important)

An analysis of the current study could not find a statistical significance between cervical cancer screening and reluctance to take a test (OR= 1.14, 5% CI: 0.73 - 1.79) and test is not important (OR= 0.72, 95% CI:0.4 3- 1.14). Findings from the current study revealed that the majority of cases 154 (74.40%) reported that reluctance to go for cervical cancer screening was not a barrier to their non-screening and 166 (80.19%) of cases rejected the view that 'screening is not important' as a hindrance to screening. The remaining minority percent in both factors reported otherwise.

A systemic review which assessed barriers to screening in Sub-Saharan Africa and a cross-sectional study done in Kenya revealed that some women felt no benefits in going for screening when a positive outcome has no remedy [28][34]. In an Indian study women felt that screening is only important to women with multiple partners since cervical cancer is associated with promiscuity [30].

5.2.3.14 History of cervical cancer screening and parity.

The study found a positive association between increased parity and receipt of Pap smear in both the bivariate and multiple logistic regression analysis (AOR= 4.50, 95% CI: 2.25 - 9.02) as women who have had children are 4.50 times more likely to have cervical cancer screening, compared to women who never had children. A greater propotion of controls 194 (93.72%) reported that they have at least one or more children as compared to 13 (13.83%) controls without children. This may mean that, women with children may think that they are at higher risk of cervical cancer or that they are likely to receive information about cervical cancer screening services from health care workers during obstetric care. In a hospital-based study

which involved 812 respondents to investigate factors influencing cervical cancer screening among Indian women, 116 (15.78%) parous women were found to be screened, compared to 6 (7.79%) nulliparous women who were screened and the rest never had cervical cancer screening [30].

The significant differences in numbers seen here could be associated with differences in study designs which could potentially lead to the observed differences in percentages between the two studies. The current study is a one-to-one case-controls and the other study was a prevalence. Moreover, in Kenya findings were not different from this study. There were more multiparous women screened compared to nulliparous women who were screened [28]. Explanations could be that the utilization of cervical cancer screening services was found to be directly proportional to parity. Additionally, about 138 (66.67%) women who reported to have ever had cervical cancer screening were not screened in the last 12 months and only the remaining 69 (33.33 %) reported to have been screened in the last 12 months.

5.3 CONCLUSION

The results from this study reveal that increased parity is an important determinant for being screened for cervical cancer. Results also demonstrate that not having children had a higher likelihood of not being screened and having children increase one's chance of having cervical cancer screening. Cases were significantly younger in age when compared to controls.

Further multiple logistic regression analysis determined that the fear that screening will reveal cervical cancer, fear of pain from the procedure, lack of signs and symptoms of the disease and a low perceived risk of the disease by individuals were mostly statistically significantly associated with the dependent variable of cervical cancer screening among the studied group.

Embarrassment was a potential confounding effect. Furthermore, the study revealed via multiple logistice regression that socio-demographic factors such as, having secondary education, being married and those aged 30-39 year is significantly associated with cervical cancer screening seeking behaviors. Students where less likely to be screened when compared to both employed and unemoloyed women. The study did not find any statistical significance between religious practices, cultural practices, physical distance to health facilities, lack of transport money, not willing to take a test, view that screening is not important, gender of care giver, health care workers' negative attitudes and fear of partner's reactions towards screening. Socio-demographic profile such as, employment status, religious, residential were all non significant.

This study provides insight on factors that are significantly associated with cervical cancer screening among women of childbearing age seeking services at Intermediate Hospital Oshakati. Thus, identified factors may serve as targets for cervical cancer screening health education interventions by health care health workers.

5.4 RECOMMENDATIONS

Based on the study findings, the following are recommended to the following agencies:

5.4.1 Ministry of health and social service (MoHSS) and health development patners

- There is a need to develop age-specific appropriate messages that will target different youth groups, to encourage increase in service utilization of cervical cancer screening among youth.
- There is a need to develop a policy targeted at cervical cancer screening adherence.
- There is a need for coordinated efforts between MoHSS and health partners in addressing broader key aspects of cervical cancer screening.
- Further studies should be conducted with a larger sample size to shed more light on factors associated with cervical cancer screening among all women population and age-groups that were excluded from this study.

5.4.2 Oshana Regional Health Directorate

- Educational campaigns should focus on improving women's beliefs and encourage them to seek services even if they lack signs and symptoms of the disease.
- Further research needs to be conducted to determine awareness and knowledge levels about cervical cancer screening among youthful women.

5.5 LIMITATIONS

This study had some limitations. Firstly, this was a self-reporting evaluation of cervical cancer screening, and it may not be entirely authentic. However, potential biases were minimised during the explanation of the study objectives and asking respondents to be truthful in their responses, since no personal details were attached which improved data validity and reliability.

Secondly, the study included only women aged 15-49 years old attending Intermediate Hospital Oshakati (IHO) Ante Natal Care (ANC), therefore, views of respondents were not representative of the whole country and findings may not be generalized to other areas.

5.6 SUMMARY

This chapter presented the relevant findings of the study with detailed discussion on the extent to which findings support or contradict literature. Interpretation of the study findings were based on set objectives. The chapter also presented the significance of the study, conclusion and recommendations in relation to the findings and study objectives. Limitations of the study were also described in relation to the study design and other limiting factors.

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ANNEXURE A: UNAM RESEARCH PERMISSION

CENTRE FOR POSTGRADUATE STUDIES

University of Namibia, Private Bag 13301, Windhoek, Namibia
340 Mandume Ndemufayo Avenue, Pioneers Park
☎ +264 61 206 3275/4662; Fax +264 61 206 3290; URL: http://www.unam.edu.na

UNAM
UNIVERSITY OF NAMIBIA

RESEARCH PERMISSION LETTER

Student Name: Ndiitodino Kakehongo

Student number: 200233416

Programme: Masters of Science in Applied Field Epidemiology

Approved research title: Factors affecting cervical CA screening among women of childbearing age, In Intermediate Hospital Oshakati, Oshana

TO WHOM IT MAY CONCERN

I hereby confirm that the above mentioned student is registered at the University of Namibia for the programme indicated. The proposed study met all the requirements as stipulated in the University guidelines and has been approved by the relevant committees.

The proposal adheres to ethical principles as per attached Ethical Clearance Certificate. Permission is hereby granted to carry out the research as described in the approved proposal.

Best Regards

23/06/17

Date

Name: Dr Marius Hedimbi
Director: Centre for Postgraduate Studies
Tel: +264 61 2063275
E-mail: directorpgs@unam.na

Centre for Postgraduate Studies
Office of the Director
2017 -06- 23
University of Namibia
UNAM

ANNEXURE B: MOHSS RESEARCH PERMISSION LETTER

REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

Private Bag 13198	Ministerial Building	Tel: 061 – 2032150
Windhoek	Harvey Street	Fax: 061 – 222558
Namibia	Windhoek	Email: shimenghipangelwa71@gmail.com

OFFICE OF THE PERMANENT SECRETARY

Ref: 17/3/3 **NK**
Enquiries: Mr. J. Nghipangelwa

Date: 01 August 2017

Ms. N Kakehongo
P.O. Box 1011
Ondangwa
Namibia

Dear Ms. Kakehongo

Re factors affecting cervical cancer screening among women of child bearing age , Intermediate Hospital Oshakati (IHO).

1. Reference is made to your application to conduct the above-mentioned study.
2. The proposal has been evaluated and found to have merit.
3. **Kindly be informed that permission to conduct the study has been granted under the following conditions:**

3.1 The data to be collected must only be used for academic purposes;
3.2 No other data should be collected other than the data stated in the proposal;
3.3 Stipulated ethical considerations in the protocol related to the protection of Human Subjects' should be observed and adhered to, any violation thereof will lead to termination of the study at any stage;
3.4 A quarterly report to be submitted to the Ministry's Research Unit;
3.5 Preliminary findings to be submitted upon completion of the study;

3.6 Final report to be submitted upon completion of the study;

3.7 Separate permission should be sought from the Ministry of Health and Social Services for the publication of the findings.

Yours sincerely,

Andreas Mwoombola (Dr)
Permanent Secretary

"Health for All"

ANNEXURE: C: OSHANA REGIONAL HEALTH DIRECTORATE RESEARCH PERMISSION LETTER.

Republic Of Namibia
Ministry of Health and Social Services
Oshana Health Directorate

Private Bag 5538
Oshakati
Namibia

Tel: 09-264-65-223 3119
Fax: 09-264-65 220 303
jhaimene@mhss.gov.na:

Enquiries: Ms. J.A. Haimene

15/09/2017

TO WHOM IT MAY CONCERNED

RE: AUTHORIZATION TO MAKE USE OF THE HEALTH FACILITIES IN OSHANA TO COLLECT DATA FOR STUDY PURPOSES

Ms M. Kakehongo has been granted authorization to make use of the health facilities in Oshana for her study purpose as indicated by the attached letter from the office of the Permanent Secretary.

Please offer her your usual cooperation.

Thank you

MINISTRY OF HEALTH AND SOCIAL SERVICES
15 SEP. 2017
REGIONAL DIRECTOR
OSHANA HEALTH DIRECTORATE

Ms Johanna A. Haimene
Regional Director
Oshana Health Directorate

ANNEXURE D: RESPONDENT'S INFORMATION AND CONSENT FORM

Dear Prospective Respondents

My name is Ndiitodino Kakehongo a student at the University of Namibia studying towards a Master's Degree in Applied Field Epidemiology and Laboratory Management under the supervision of Dr Lusia N. Phinehas and Professor Longin Barongo. I am conducting a research on factors affecting cervical cancer screening among women of childbearing age at Intermediate Hospital Oshakati, Oshana Region.

Purpose of the study

This study will collect vital information from women of childbearing age on factors affecting Cervical Cancer Screening. The issue under investigation may shed light on why women do not go for screening and will help develop interventions to address the factors and encourage the intake of screening. Furthermore, the research findings will provide evidence-based information to the Ministry of Health and Social Services so that cervical cancer screening services can be evaluated and improved.

Why have you been selected to participate?

You have been selected to participate in this study because of the following reasons:

- You fall in the required population group for the study and your participation may add value to the study. Kindly note that about 414 respondents have been invited to participate in this study.
- The study will involve the manual completion of this consent form and a questionnaire. Taking part in this study is entirely voluntary, therefore, kindly note that it is up to you to decide whether or not to take part. Even after you have decided to participate, you are still free to withdraw at any time without providing reasons.

What are the disadvantages of taking part?

You may need time to complete the questionnaire, otherwise no discomfort is expected since confidentiality and anonymity will be maintained. In case you have any concerns, feel free to liaise with a researcher and supervisors.

What will happen to the study findings?

The findings of this study will be communicated in a copy of the thesis being filed with the University of Namibia as well as the Ministry of Health and Social Services' resource centre in Windhoek once the Degree is conferred and the thesis has been published.

Who approved the study?

The study has been approved by the Ethical Committee of the University of Namibia, Ministry of Health and Social Services as well as the Oshana Regional Health Directorate Management team.

Consent to participate in the study

I confirm that the person asking my consent to take part in this study has explained to me the nature, purpose, process, risks, discomforts and benefits of the study.

I have also received, read and understood the above-written information regarding the study. I am aware that the results of the study, including personal details will be anonymously processed.

- I am participating willingly.
- I had time to ask questions and have no objections to participate in the study.
- I understand that there is no penalty should I wish to discontinue with the study.
- I have received and signed a copy of this consent agreement.

Signed……At…….……

…….on……

Contact details for further information

Dr L.N. Pinehas, 0812358250 lpinehas@unam.na(Main Supervisor)

Prof L.Barongo lbarongo@unam.na(Co-Supervisor)

Ms N.Kakehongo at 0812571672 or e mail kkekango@yahoo.com (Researcher)

ANNEXURE E: MINOR CONSENT FORM

Consent for minors participating in the study.

I confirm that the person asking consent for my dependant to take part in this study has explained to me the nature, purpose, process, risks, discomforts and benefits of the study.

I have also received, read and understood the above-written information regarding the study. I am aware that the results of the study, including my dependant's personal details will be anonymously processed.

- I am willingly giving consent for my dependant to participate in the study
- I had time to ask questions and have no objections to allow my dependant to participate in the study.
- I understand that there is no penalty should I wish to withdraw my dependant from the study.
- I have received and signed a copy of this consent agreement on behalf of my dependant

Signed on behalf of my dependant.....At……...

…….on……

Contact details for further information

Dr L.N. Pinehas, 0812358250 lpinehas@unam.na (Main Supervisor)

Prof L .Barongo lbarongo@unam.na (Co-Supervisor)

Ms N. Kakehongo at 0812571672 or e mail kkekango@yahoo.com (Researcher)

ANNEXURE F: DATA COLLECTION TOOL

Questionnaire

Institution: University of Namibia

Course of Study: Master in Applied Field Epidemiology

Principal investigator: Ndiitodino Kakehongo

Study title: Factors affecting cervical cancer screening (Pap smear test) among women of childbearing age attending Intermediate Hospital Oshakati (IHO), Oshana region, Namibia: A case-control study

You may tick the most appropriate response [√]

Section A: Demographic information about the respondents

1. **Religion**

   a) Christian [ ] b) Muslim [ ] c) Hindu d) Jewish [ ] e) Buddhism [ ]

   f) Baha'i g) Other [ ]

2. **To which age group do you belong?**

a) 15-19 years [ ] b) 20-29 years [ ] c) 30-39 years [ ]

d) 40-49 years [ ] e) Unknown [ ]

3. **What is your marital status?**

   a) Single [ ] b) Married [ ] c) Divorced [ ]

   d) Widowed [ ] e) Separated [ ] f) Living together [ ]

4. **What is your level of education?**

   a) Primary School Education (Grade 1-9) [ ]

   b) SecondarySchool Education (Grade 10-12) [ ]

   c) Tertiary (College/University) [ ]

d) No formal school [ ]

5. **Where do you reside/stay?**

a) Urban [ ] b) Rural [ ]

6. **Are you employed?**

a) No [ ] b) Yes [ ] c) Student [ ]

Section B: History of cervical cancer screening and parity

7. **Do you have children?**

a) No [ ] b) Yes [ ]

8. **If yes, how many pregnancy did you had in your life?**

a) 1-2 [ ] b) 3-4 [ ] c) more than 4 [ ]

9. **How many children do you have?**

a) 1-2 [ ] b) 3-4 [ ] c) More than 4 [ ]

10. **Have you ever been screened for cervical cancer (Pap smear test) before**?

a) Yes [ ] b) No [ ] c) Do not remember [ ]

11. **If yes, had Pap smear in the last 12 months?**

a) No [ ] b) Yes [ ]

Section C:

12. **Probable factors that may influence seeking cervical cancer screening**

You may tick the most appropriate response [√]

12.1 Fear that cervical cancer screening will reveal cervical cancer **Yes [ ] No [ ]**

12.2 Test is embarrassing **Yes [ ] No [ ]**

12.3 I have no knowledge about the cervical cancer test **Yes [ ] No [ ]**

12.4 Religious practices **Yes [ ] No [ ]**

12.5 Disease is not a risk to me **No [ ] Yes [ ]**

12.6 I have no signs and symptoms of the disease yet **Yes [ ] No [ ]**

12.7 Cultural practices **Yes [ ] No [ ]**

12.8 Health facilities are far **Yes [ ] No [ ]**

12.9 No transport money to go to the health facility **Yes [ ] No [ ]**

12.10 Not willing to take a test **Yes [ ] No [ ]**

12.11 Screening is not important **Yes [ ] No [ ]**

12.12 Fear of pain from procedure **Yes [ ] No [ ]**

12.13 Health care workers' negative attitudes **Yes [ ] No [ ]**

12.14 My partner might think I am unfaithful

No [ ] Yes [ ]

12.15 Gender of care giver **Yes [ ] No [ ]**