

Perception, Sources of Information and Utilization of Papanicolaou (PAP) Smear for Cervical Cancer screening among Female Nurses in Southwest Nigeria. Part 1.

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Abstract

Background: Among the most prominent causes of death in African women, cervical cancer takes top priority. This study examines the perception of Papanicolaou smear, document its utilization and assess its sources of information among female nurses in a tertiary health institution in Southwest Nigeria.

Study Design: A semi-structured open and close-ended questionnaire was designed, piloted and adopted. The study employed a cross-sectional descriptive approach and a systematic random sampling technique to select 210 sexually active nurses in different sessions of wards, theatres and clinics in a tertiary teaching hospital in Southwest Nigeria. Data analysis by SPSS 16 software used descriptive statistics and test. A P-value of ≤ 0.5 was taken as statistically significant value. Ethical clearance was taken from the institutions while informed consent was taken from each subject.

Results: Among the 210 respondents (mean age 39.4 years), majority (96.2%) were Christians, 61.0% were sexually active within the previous 6 months and 175 (83.3%) were parous. Formal lectures and trainings were the most common (73.8%) sources of information on cervical cancer. Multiple sexual partner and early sexual activity were correctly identified by 87.3% and 77.6% respectively as risks for developing cervical cancer. While respondents demonstrated adequate knowledge both for risk factors (75.2%) and symptoms (88.6%) of cervical cancer, this knowledge was not associated with age, marital status or years of working experience.

Conclusion: Since most female nurses are among health workers who provide health education for secondary school students and women in rural communities, awareness on perception of cervical cancer being high among female nurses is of significant importance.

Keywords: Cancer of the cervix, Risk Factor among black women, Health education, Pap Smear, Rural women.

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Introduction

Carcinoma of the cervix is a major public health problem throughout the world. Globally, cervical cancer is a major

cause of cancer-related morbidity and mortality in women [1]. It continues to be the second commonest female cancer worldwide after breast carcinoma. An estimated 500,000 new cases and 250,000 deaths occur worldwide annually, with the

vast majority (80%) of these in developing countries [2,3]. Apart from the burden in terms of number borne by this part of the world, other peculiar negative trends observed are lower mean age of diagnosis, late presentation and resultant very low five-year survival data [4,5]. In developing countries, cervical cancer tends to present about 15 years earlier than it does in developed countries. It is therefore postulated that a more aggressive variant of the disease probably occurs in this environment [6]. As many as 80% of diagnosed cases are detected in the advanced stages in which treatment, even when available, has a markedly reduced likelihood of success [7]. Many cases remain undiagnosed. WHO estimates that the contribution of cervical cancer to adult female death is 35% [8].

In Nigeria, as in other developing countries, cancer of the cervix is the most common cancer in women [9-12]. There is no national figure on the incidence or prevalence rates of cervical cancer; however, from a recent worldwide estimated age-standardized incidence of cervical cancer, Nigeria has an estimated incidence of 30 per 100,000 women 2. Regional reports agree on this high incidence rate. The radiotherapy unit of Ahmadu Bello University opened in 1996 has treated over 4000 cases of cervical cancer out of a total of 5708 gynecological cancers [13]. Cervical cancer constituted over 60% of histologically confirmed cancer cases among women in a 10-year review from Ilorin [13]. At the University of Benin Teaching Hospital (UBTH), carcinoma of the cervix constituted 4.35% of the total gynecological admissions and comprises 74.6% of all cases of malignant gynecological tumors, Lagos and Enugu have similar finding [9,11].

Evidence from epidemiological studies coupled with recent advanced molecular biology findings have established a strong causal association between infection by certain serotypes (particularly 16 and 18) of sexually transmitted Human Papilloma virus (HPV) and cervical cancer [11]. The virus exerts greater effects during periods of rapid metaplasia in the cervical epithelium, mostly in the period of adolescence [14].

Certain sexual behaviours are known to predispose to cancer of the cervix. These are early sexual debut (earlier than the age of 20 years) and multiple sexual partnerships, either in the female or her partner. The number of sexual partners is the major independent risk factor whereas age at first sexual intercourse has been reported to be a confounder [15,16]. Other risk factors for cervical cancer include high parity and low socio-economic status. These factors are prevalent in Nigeria and other developing countries [16]. Though earlier studies were suggestive of the protective effect of barrier contraceptives, condom use has been shown to be only partially protective against HPV infection, unlike other sexually transmitted diseases [17].

During the past four decades, the incidence and mortality from cervical cancer have declined significantly in the developed country primarily because of the widespread use of the Papanicolaou (Pap) test as a screening test to detect cervical abnormalities, and the speed of decline has decreased such that it appears to have plateau at present. However, a higher incidence rate is still being observed in developing countries. The prevention of cervical carcinoma relies on population screening for the early detection and appropriate management of its precursor lesions;

cervical intraepithelial neoplasia [18]. Papanicolaou and Traut [19] first described the Papanicolaou (pap) smear test for cervical screening in 1941. Pap smears effectively reduce the incidence of cervical cancer by 75–90% [20].

The American Cancer Society recommends a Pap smear every year beginning at age 18 years or when sexually active and more frequent screening in high risk populations [20]. Young girls in Nigeria are reportedly highly sexually active [21,22] and in our environment there is a high rate of cervical intraepithelial neoplasia in adolescents [23].

Therefore, every woman should be screened at every opportunity of contact with a health professional, at first antenatal clinic visit, family planning clinic, sexually transmitted infection (STI) clinic, and gynecology clinic; for those women who are sexually active, annual screening from age 18 to 35 years is advised, thereafter every 3–5 years provided the test results remained negative [24]. International health organizations, including the World Health Organization recommend that countries with limited resources should aim at screening every woman once in a lifetime at about the age of 34–40 years [3,24]. Regular screening of sexually active women would undoubtedly confer an overall public health benefit by reducing morbidity and mortality from this disease and so should be encouraged.

Although population-based screening program and treatment of premalignant lesion are far more cost-effective preventive intervention than management of invasive cancer, most of the developing countries are yet to establish any meaningful prevention program. Factors responsible for this poor state are near to nonexistence of reliable health infrastructure, which is a prerequisite for a successful program [3]. For cytologic test to be reliable and effective at a minimum, it requires trained providers, a reliable cytology laboratory, continuous access to high-quality equipment and supplies, proven record keeping systems, and effective referral mechanisms for diagnosis and treatment [3]. These prerequisites are not there in most developing countries. At personal level, lack of awareness of symptoms and signs of early stages of cervical cancer, inappropriate beliefs and misconception, and perceived non-susceptibility are some of the factors that operate to influence the willingness of women to uptake screening services, early presentation, and compliance with treatment follow-up.

The level of awareness and utilization of cervical cytology services among women in the country is unclear as there is no reliable population-based cancer registry or prevention program databases, and very few regional population based studies have been reported in the country [25,26].

Materials and Methods

Study location

This study was carried out among all the practicing female nurses at a tertiary health institution (Ife Hospital Unit [IHU]) of the Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC), Ile-Ife, Osun State, Nigeria. IHU is one of the two arms of OAUTHC offering tertiary health care: Wesley Guild Hospital (WGH) in Ilesha is the other one. OAUTHC serves as tertiary referral center for secondary and primary tiers of hospitals in a

wide geographical spread in the entire South-west geo-political zone of Nigeria, mainly in Ile-Ife, Ijeshaland in Osun State, Ondo Township, Akure and other smaller towns in Ondo State and in Ado-Ekiti, Aramoko in Ekiti State.

Study design

The study employed a cross-sectional descriptive survey approach.

Study Population

The population of female nurses in Ife Hospital unit of OAUTHC is 493. The population of female nurses in Ife Hospital unit of OAUTHC is 493. All female nurses across all the sections of the Ife- unit hospital of OAUTHC were eligible.

Sample size Determination

The sample size was determined using the Leslie Kish's 27 formula for single proportions which stated:

$$n = \frac{z^2 pq}{d^2}$$

Where n = minimum sample size; z = standard normal deviate of 1.96 when the critical limit is set at 95% confidence interval in a two-tailed hypothesis test; p = awareness of Pap smear among female nurses according to a similar study done in Nnewi by Udigwe [27]; d = degree of accuracy desired or maximum allowable margin of error set at 5%; and q = 1- p.

$$n = \frac{1.962 \times 0.87(1-0.87)}{(0.05)^2}$$

$$n = \frac{3.84 \times 0.87 \times 0.17}{0.0025}$$

$$n = 173.72$$

Imputing the prevalence into the formula, the minimum sample size calculated was approximately 174. However, to improve the robustness of the analysis for the purpose of identifying associated factors for utilization of screening; sample size was increased to 260.

Sampling method

A systematic random sampling technique was employed to select nurses in different sessions of wards, theatres and clinics. Recruitment was based proportional on their ratio to each other, and from each subgroup, respondent were selected on the basis of first seen.

Data Collection

A standard closed-ended self-administered structured questionnaire adopted from WHO was administered to obtain relevant information for the study from all consenting practicing female nurses. The questionnaire was divided into three sections as follows;

- i. Socio-demographic characteristic of the respondents
- ii. Knowledge about symptoms, risk factors for cervical cancer, screening methods for cervical cancer and use of using Pap smear.

- iii. Evaluation of attitude and practice (utilization) of Pap smear among study groups.

The level of knowledge about symptoms, risk factors for cervical cancer, screening methods for cervical cancer and use of Pap smear were scored based on the number of correctly answered questions. Respondent with score of 3-6 above for risk factors was graded as having adequacy of knowledge and below 3 was graded inadequate of knowledge. Prior to data collection, the questionnaire was pre-tested. This is to ensure that the questions are acceptable and there is willingness to answer them and whether they are appropriate in eliciting responses that are consistent with study objectives. Ambiguous questions were rephrased.

Data Analysis

Data entry and analysis was carried out using SPSS (version 16.0). The data were presented in Frequency distribution tables with percentages and chi-square analysis for categorical variables was used to test level of significance at p < 0.05.

Human Participant Protection (Ethical Consideration)

This study was approved by the Obafemi Awolowo University Teaching Hospital institution review board.

Results

The 210 respondents (mean 39.4 ±10.1 years old), as shown in Table 1, Figure 1, were segregated into 4 age groups the lowest in proportion being those aged 20-29 years (16.2%) and the highest being those aged 30-39 years (34.3%). Majority were ever married (181, 86.2 %), of Christianity religious faith (202, 96.2%) and Registered Midwife (118, 56.2%). Nurses with less

Table 1 Frequency distribution of the socio-demographic characteristics of respondents in the survey.

Variable	Frequency	Percentage
Age group (years)		
20-29	34	16.2
30-39	72	34.3
40-49	42	20
≥50	62	29.5
Total	210	100
Marital status		
Single	29	13.8
Ever married	181	86.2
Religion		
Christianity	202	96.2
Islam	8	3.8
Educational status		
Registered Nurse	23	11
Registered Midwife	118	56.2
Tertiary/BSc/MSc	69	32.8
Years at work		
≤10	93	44.3
10-20	54	25.7
≥21	63	30

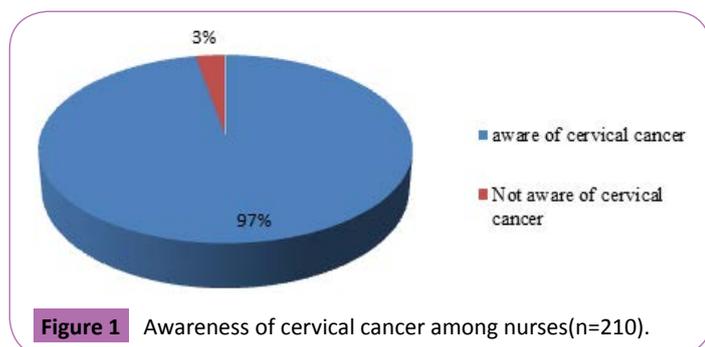


Figure 1 Awareness of cervical cancer among nurses(n=210).

than 10 years of working experience made up the largest (93, 44.3%) proportion while those with 21 or more years of working experience made up 30% of the respondents. Table 2, Figure 2 highlights the presence of some of the sexual risk factors for cervical cancer among the respondent. Thirty nine (18.6%) of the responding female nurses had early sexual debut before the age of twenty years and nine (4.3%) had had at least two sexual partners. In all, 175 (83.3%) respondents were parous out of whom 131 (62.4%) were multiparas and 14 (6.7%) were grand multiparas.

Table 3 shows responses to the source of information on cervical cancer among the female nurses. Majority of the respondents (73.8%; 71.4%) detailed formal lectures during training and seminars respectively. Other sources of information on cancer of the cervix were work exposure (70.0%), reading medical books (69.0%) media (55.7%) and the internet (48.1%).

Table 4 presents the result of the respondents' assessment of the knowledge about risk factors/causes, symptoms and screening techniques for cervical cancer. In this table, multiple sexual partner (183, 87.1%) and early sexual activity (163, 77.6%) respectively were correctly identified as risks factors for developing cervical cancer the respondents. On the contrary, 167 (79.5%) and 111 (52.9%) respectively gave incorrect responses such as family history of cervical cancer and multi-parity, factors not known to be associated with cancer of the cervix.

In the same table, the most common symptoms of cervical cancer identified was post coital bleeding (86.2%), followed by foul smelling vaginal discharge (82.9%) and post- menopausal bleeding (81.9%). However 19.5% associated dysmenorrhea as a symptom of cervical cancer. Majority of the nurses correctly identified Pap smear (97.6%), visual inspection with acetic acid (VIA) (51.0%) and testing for HPV (71.0%) as screening tests for cervical cancer. However, only 40.0% correctly knew colposcopy as a screening technique for cervical cancer.

Respondents demonstrated adequate knowledge for risk factors of cancer of the cervix (Table 5). The highest proportion of nurses with adequate knowledge of cancer of the cervix were those in the age range of 30-39 years (57, 36.1%) followed by those aged above 50 years (46, 29.1%). There was no significant difference in the proportion of single and married respondents with adequate knowledge of the disease ($\chi^2=0.14$; P-value=0.70; OR=0.84, 95% CI=0.35, 2.04). The table also shows that the associations between adequate knowledge of cancer of the cervix on one part and age, educational status and working experience on the other

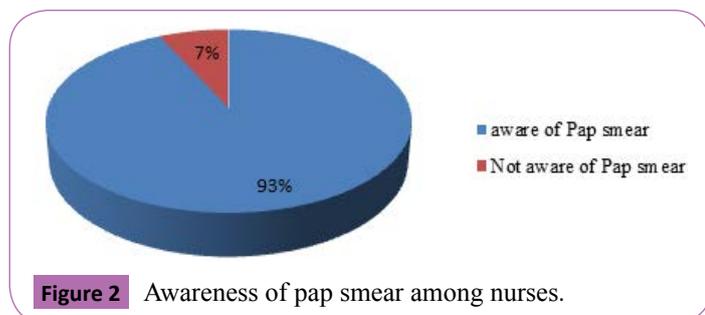
part, were of no statistical significance. The highest proportion of female nurses who demonstrated adequate knowledge of the signs and symptoms of cancer of the cervix were in the age group 30-39 years (34.3%). Though all the respondents who were single correctly identified signs and symptoms of the disease, and though 157 out of the 181 (86.7%) married responded also correctly identified the signs and symptoms, there were no significant differences in the proportions of these two groups of respondents. Likewise, age, educational status and working experience were not significantly associated with knowledge of the signs and symptoms of cancer of the cervix among the respondents.

Discussion

Cervical cancer is notorious in that it is heralded by a variety of pre-cancerous lesions commonly referred to as Cervical Intraepithelial Neoplasia (CIN) and Squamous Intraepithelial Lesions (SIL) respectively. Pre-invasive antecedents may occur in a changeable phase of surface or in situ disease for many years. Kishore et al. [28] described the mean age of patients with carcinoma in situ as 15.6 years younger than that of patients with invasive squamous cell carcinoma. According to these authors, early detection of the pre-cancerous lesions can lead to completely treatment by ablative or excisional methods of surgery, but left untreated, a significant number of these may persist and progress to invasive cancer. Consequently, screening for pre-invasive and early invasive lesions of the cervix is a priority. So far, the only proven strategy for the prevention of cancer of the cervix is cytological screening using Pap smear with appropriate treatment and follow-up. When looking into the level of awareness of cervical cancer, this present study shows a high level (97%) of awareness of cervical cancer among the study group, similar to the 99% obtained among nurses elsewhere in Nigeria [29]. Interestingly 39 (18.6%) of respondents had their sexual debut (coitarche) before age 20 years and only 4.3% of them were sexually exposed to multiple partners, in contrast to 39.7% and 59.9% respectively reported by Gharoro and Ikeanyi [13]. The awareness of cervical cancer among the nurses was very high at 97% contrary to 33% reported by Kishore et al in India [27]. Other studies reported lower awareness of cervical cancer among female civil servant [29] and among market women in Nigeria [30,31]. Awareness of a disease condition often leads to reducing its morbidity and probably mortality. For example, the incidence of cervical cancer in high-economy countries has decreased due to high awareness screening, early detection and treatment. However, in low-economy countries, 80% of the cervical cancers are their advanced stage when they are incurable at the time of detection due to lack of awareness [28]. About 77% of the nurses correctly identified Human Papilloma Virus (HPV) as one of the risk factors for cervical cancer while almost all (98.1%) did not classify witchcraft as a cause. Human papilloma virus (HPV) refers to a group of epitheliotrophic DNA viruses including over 100 different strains or subtypes which are involved in human disease 33. About 30 of these strains, are sexually transmitted and are primarily transmitted to the genital tract through skin-to-skin contact [32] and are classified into low-risk, possibly high-risk and high-risk [33]. Of these, the high-risk HPV have been firmly

Table 2 Sexual practices among the respondents.

Variable	Item	Frequency	Percentage
Sexual practice	Age at sexual debut		
	Not yet sexually exposed	10	4.8
	<20	39	18.6
	≥20	161	76.7
	Total number of sexual partners in the last six months		
	0	12	5.7
	1	189	90
	≥2	9	4.3
Parity	0	35	16.7
	1	30	14.3
	2-4	131	62.4
	>4	14	6.7

**Figure 2** Awareness of pap smear among nurses.**Table 3** Sources of information about cervical cancer.

Source of information	Frequency	Percentage
Seminar	150	71.4
Work exposure	147	70
Lectures	155	73.8
Television/Radio	117	55.7
Magazines/ medical books	145	69
Internet	101	48.1

Multiple responses were given

confirmed as the cause of the cervical cancer and its immediate precursors (severe dysplasia and carcinoma in situ) [34-36].

Formal lecture and seminars were the major sources of information for many of the participating nurses, whose mean duration of work experience is about 15 years. It also substantiates the report that showed a good association between level of education and cervical cancer awareness [37]. However, it is a thing of concern that information about cervical cancer through internet to update and improve knowledge were by few percent of nurses (48.1%), indicating low internet consumption, time constrain due to work and poor internet facilities services in that part of the country. Other factors that may mitigate against the use of internet are inability to purchase a laptop, poor access to institution information center that is overcrowded by other students, irregular power supply and inability to procure an electricity generating set. Even if there is access to the internet, these nurses still need to be educated on using search engines

to source various information. Previous studies suggested that the risk of developing cervical cancer is high for most women in the developing world due to peculiar socio-economic characteristics including poverty and illiteracy (which reduce the power of women). Others are high parity and poor utilization of screening facilities [14,16]. Nurses should be trained and well-versed in the use of computer and internet to source for and expand their knowledge base in modern management of cervical cancer. Studies have shown that other groups of health workers [28] and women 30-32 have little awareness and knowledge of cervical cancer and its health implication. Nurses are therefore in apex position to engage in community health services to educate young girls, market women and adolescents on cervical cancer screening and management. Use of the computer and access to the internet is getting wider day-by-day in remote areas of developing countries. In a Kenyan study, cervical cancer patients reported that the internet had an important role in the management of the disease in health education (17.6%), online consultation (14.6%), booking of patients (13.6%), referrals (8.5%) and collecting data (7%) [40]. Use of Short Message Service (SMS) and mobile phone penetration have been identified as potential solution to improve medical and public health practice in Africa [38].

To summarize, a vast majority of the female nurses in tertiary health institution in southwest Nigeria have good knowledge and high awareness of signs and symptoms of cervical cancer. By their age groups and, age of sexual debut and total number of sexual partners, some of these female nurses are exposed to cervical cancer. A program should be created specifically for female nurses to undergo screening for cervical cancer using Pap smear method. Furthermore, these female nurses should also participate in community health education to raise rural awareness on cervical cancer for early detection of potential cases and early reduction in its morbidity and mortality.

Study weaknesses

Some weakness in this study should be noted. For example, the sampling frame was the list of only female nurses, excluding male nurses in a tertiary health institution of study. Furthermore, this institution is located in one geo-political zone of the country and thus is not representative of a national study or responses from other five geo-political zones and the Federal Capital Territory. Also, because there has been no national survey on cervical cancer in the past decade, we could not ascertain the prevalence of this disease in the urban and rural areas of the country.

Recommendation

Future studies should assess nurses' use of the internet according to their urban or rural residence, frequency of use as well as history of use. The Federal Ministry of Health and Partners should deliberate on conducting a national survey of cervical cancer and give an up-to-date data for evidence-based policy of its detection and management. It is proposed that survey on cervical cancer be conducted on a four-yearly basis. We also speculate that cervical cancer is rampant among rural women who are probably

Table 4 Knowledge of Risks factors/causes, Symptoms and Screening techniques for Cervical Cancer.

		Responses			
		Yes		No	
		Frequency	Percent	Frequency	Percent
Risk Factors	Witchcraft	206	98.1	4	1.9
	Multiple sexual partner	183	87.1	27	12.9
	Partner with MSP	117	55.7	93	44.3
	Early sexual activity	163	77.6	47	22.4
	Failure to use condom	184	87.6	26	12.4
	Smoking	64	30.5	146	69.5
	HPV infection	163	77.6	47	22.4
	Multi-parity	99	47.1	111	52.9
	Family history of Cervical Cancer	43	20.5	167	79.5
	Signs and symptoms	Dysmenorrhea	169	80.5	41
Postmenopausal bleeding		172	81.9	38	18.1
Foul-smelling vaginal discharge		174	82.9	36	17.1
Post-coital bleeding		181	86.2	29	13.8
Screening Techniques for Cervical Cancer	Pap smear	205	97.6	5	2.4
	Testing for HPV	149	71	61	29
	Visual inspection with Acetic acid	107	51	103	49
	Colposcopy	84	40	126	60

exposed to sex at an early age. Cervical cancer patients may be of younger age group than previously thought of due to early sexual debut but go un-noticed because of poor reporting system and poor record-keeping. Female nurses should be trained not only in leading community awareness of cancer of the cervix but also in the use of the internet to broaden their knowledge and aptitude of the disease.

Acknowledgement

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Table 5 Adequacy of knowledge of risk factors and signs and symptom of cervical cancer by demographic characteristics of respondents.

Variable	n (%)	Knowledge of Risk factor for cervical cancer		Knowledge of Signs and Symptoms of cervical cancer	
		Adequate	Inadequate	Adequate	Inadequate
Age (years)	n (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
*20-29	34 (16.2)	27 (17.1)	7 (13.5)	32 (17.2)	2 (8.3)
!30-39	72 (34.3)	57 (36.1)	15 (28.8)	64 (34.4)	8 (33.3)
#40-49	42 (20.0)	28 (17.7)	14 (26.9)	38 (20.4)	4 (16.7)
≥50	62 (29.5)	46 (29.1)	16 (30.8)	52 (28.0)	10 (41.7)
*!χ ² (P-value)		0.0008 (0.98)		0.74 (0.39) Fisher's	
*!OR (95% CI)		1.02 (0.37, 2.78)		2.0 (0.40, 9.97)	
*#χ ² (P-value)		1.53 (0.22)		0.34 (0.56)	
*#OR (95% CI)		1.93 (0.67, 5.51)		1.68 (0.29, 9.80)	
Marital status					
Single	29 (13.8)	21 (15.3)	8 (15.4)	29 (15.6)	0 (0.0)
Ever married	181 (86.2)	137 (84.7)	44 (84.6)	157 (84.4)	24 (100.0)
χ ² (P-value)		0.14 (0.70)		4.34 (0.04)	
OR (95% CI)		0.84 (0.35, 2.04)		Undefined	
Educational status					
*Registered Nurse	23 (11.0)	20 (12.7)	3 (5.8)	20 (10.8)	3 (12.5)
!Registered Midwife	118 (56.2)	86 (54.4)	32 (61.5)	102 (54.8)	16 (66.7)
#Tertiary/BSc/MSc	69 (32.8)	52 (32.9)	17 (32.7)	64 (34.4)	5 (20.8)
*!χ ² (P-value)		1.90 (0.17)		0.004 (0.95) **	
OR (95% CI)		2.37 (0.67, 8.32)		1.05 (0.29, 3.93)	
*#χ ² (P-value)		1.36 (0.24)		0.73 (0.39)**	
OR (95% CI)		2.18 (0.56, 8.25)		0.52 (0.11, 2.31)	
Years at work					
*≤10	93 (44.3)	73 (46.2)	20 (38.4)	85 (45.7)	8 (33.3)
!10-20	54 (25.7)	38 (24.1)	16 (30.8)	46 (24.7)	8 (33.3)
#≥21	63 (30.0)	47 (29.7)	16 (30.8)	55 (29.6)	8 (33.3)
*!χ ² (P-value)		1.21 (0.27)		1.35 (0.24)	
OR (95% CI)		1.54 (0.71, 3.30)		1.85 (0.65, 5.25)	
*#χ ² (P-value)		0.32 (0.57)		0.68 (0.41)	
OR (95% CI)		1.24 (0.59, 2.64)		1.55 (0.55, 4.36)	
Total	210 (100.0)	158 (75.2)	52 (24.8)	186 (88.6)	24 (11.4)

**=Fisher's exact test; CI=Confidence Interval

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