Prevalence of positive "Pap" smears and psychological experience among post-natal women in a tertiary health center in Kano, Nigeria

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Abstract

Cervical cancer is a preventable and curable disease if diagnosed early, as it has a well-evaluated natural history. Cervical screening has been associated with a 74% reduction in the incidence of cervical cancer. The study aimed to evaluate the prevalence of abnormal "Pap tests" in post-natal patients and the psychological experience of patients undergoing "Pap tests". This was a cross-sectional study. All newly registered post-natal patients who are sexually active and at least 3 years after sexual debut, from the age of 18 years and up to 49 years, and who gave consent were recruited for the study. One hundred and fifty-four (154) women, who completed six weeks post-partum, were recruited from October 1 to November 1, 2019. The majority of the patients were in the age group of 29-39 years, 75 (48.7%). The age ranged between 18 and 49 years, with a mean age of 34.24 years ± 6.957 SD. The mean age of marriage was 19.99 years ± 5.287 SD. The age of coitarche was 10-35 years, and 105 participants (68.18%) had their first sexual contact before the age of 20 years. The "pap" smear results were positive in 3 (1.95%) patients: Low-Grade Squamous Intraepithelial Lesion (LSIL) was found in 2 (1.30%), and High-Grade Squamous Intraepithelial Lesion (HSIL) in 1 (0.65%) patient. The prevalence of positive pap smears in post-natal patients was 1.9%. The majority of women were anxious, 78 (50.65%), and depressed, 88 (57.14%), prior to evaluation. However, no statistical association was found between risk factors, anxiety, and the number of positive smears in our sample group. A statistically significant difference was observed between anxiety and "Pap-test" by age, parity, and a statistically significant association by source of awareness in this study. Anxiety is the common reaction to any procedure, investigation or delivery of results. An abnormal response needs additional support, counseling, follow-up, and a clear explanation of the plan of management. Patients with high anxiety scores will benefit from multidisciplinary management.

Introduction

Cervical cancer is a preventable and curable disease if diagnosed early, as it has a well-evaluated natural history. It is caused by the Human Papillomavirus (HPV), leading to persistent infection, long periods of premalignant lesions, and then malignant conditions in susceptible patients.

A lifetime risk of HPV infection is near 80%.[1] Over 90% of immunocompetent women will have a spontaneous resolution of HPV infection over two years. The cervical carcinoma is preceded by a premalignant phase that usually lasts for about 10 years. Susceptibility increases in women with early age of first intercourse, multiple sexual partners, cigarette smoking, women infected with HIV, and those of lower socioeconomic class.[2] Therefore, prevention and early diagnosis of cervical carcinoma are very important to reduce the incidence in our society.

George Papanicolaou introduced cytology as a simple, effective way of detecting cancer of the cervix in its early stage when it causes no symptoms. Cervical screening has been associated with a 74% reduction in the incidence of cervical cancer. The sensitivity of the conventional "Pap smear" for the detection of cervical cancer is less than 50%.[3] Liquid-based technology was developed to improve the detection of intraepithelial lesions. The World Health Organization recommends HPV testing as the primary screening test for cervical cancer prevention at the age of 30 years, with an interval of 5 to 10 years among the general population of women, and at the age of 25 years among women living with HIV, with an interval of 3 to 5 years.[4] The American Cancer Society (ACS) recommends starting cervical cancer screening from the age of 25 and until the age of 65 years, with hrHPV testing or hrHPV/" Pap" co-testing every 5 years, or "Pap-test" only every 3 years if HPV test is not available.[5] In Nigeria, the guidelines recommend screening women between the age of 25 and 65 years using hrHPV testing and, if not available, to use other alternative methods.[6] The ages 25-64 years represent the age in which cervical changes are more significant, and cervical screening most relevant.[2] In lower-resource countries, visual inspection with acetic acid and cervicography are still used to evaluate patients.[5]

The hrHPV testing is objective, 15-20% more sensitive than a conventional "Pap smear", increasing the cost-effectiveness (eliminates annual screening) of the screening program, and reducing the number of unnecessary colposcopy.[6] Combination with "Pap smear" increases the sensitivity of "Pap smear" for high-grade neoplasia by up to 80% in women aged 30 years and above. In 1988, standardization of cervical cytology reporting took place with the development of Bethesda nomenclature. Subsequent revision led to the 2001 Bethesda system for reporting cytology results. Once an abnormal smear is reported, follow-up and treatment are recommended. Management of low-grade lesions on smears depends on the available facilities and includes repeat smears, HPV typ-

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ing, and colposcopy. Management of high-grade lesions includes colposcopy and directed biopsy. Both ablative and excisional procedures are used to treat CIN 1 and CIN 3 lesions. Depending on the extent of the lesion, available facilities, and individual preferences. In many Sub-Saharan countries, including Nigeria, currently, there are no programs for mass cervical cancer screening. The cervical cancer screening uptake in Nigeria is only 10%, while more than 80% of women aged 24-64 years participated in routine cervical smear testing in the UK.[2,8] HPV vaccines are unaffordable for the general population in our environment, as over 70% of people live on less than USD 1.0 per day, while it costs USD 100.00 for a course of trivalent vaccine.[2]

Cervical cancer is one of the most common causes of death amongst women in developing countries, which is due to the failure to establish cervical screening programs. There are many barriers to its establishment, one of which is a lack of awareness and knowledge of cervical cancer and its prevention. Others include limited financial, human, and health resources.

In our center, women during their last postpartum visit (6 weeks) are counseled on the necessity of cervical cancer screening. During the postpartum period, the cervix completes the reparative process; patients diagnosed with condylomas or CIN1 during pregnancy might have a spontaneous resolution. Northern Nigerian women diagnosed with Low-Grade Squamous Intraepithelial (LSIL) antenatally demonstrated regression in 13-15 % during their post-natal period.[11,12] However, there is a risk that a new disease may develop or a small focus of existing disease may become apparent within the transformation zone during this period. Therefore, the antenatal and postpartum periods might be the only time for Northern women to address their health issues and perform a cervical cancer screening, as many women probably never had it before pregnancy.

Patients receiving an abnormal smear result need to cope with upcoming problems such as social, psychological, economic, and physical aspects of their life. Often, the psychological concerns of cancer patients go undetected and unrelieved.[11-13] The active coping style helps in psychological adjustment to stressful events by accepting the condition, while the passive coping style denies the condition, leading to anxiety and depression.[14] Such patients require adequate education, counseling, and psychotherapy.

The psychological concerns of patients, especially those with abnormal smears are neglected and, as a result, patients are anxious and depressed.[12] Therefore, this study sets out to evaluate the anxiety and depression of patients undergoing "Pap test". Findings will justify psychosocial interventions to the patients that will improve their coping style.

There are different validated instruments available to assess patient anxiety for specific medical conditions, for example, Patient Health Questionnaires-4 (PhQ-4), Brief COPE (Coping Strategy Inventory), The State-Trait Anxiety Inventory, and HADS (Hospital Anxiety and Depression Scale) questionnaires. HADS is a portable and easy-to-administer measure of the present anxiety or depressive state of the patient. It is equally effective in hospital outpatients and community studies. Extensively researched and validated, it has gained a high reputation amongst psychiatrists, clinical psychologists, and doctors. The instrument has been validated for use in Nigeria for screening of mental illness. It was reported that sensitivity of the anxiety scale ranges from 85.0% in the medical ward and surgical ward to 92.9% in the antenatal clinic, while sensitivity for depression sub-scale ranged from 98.5% in the community sample to 92.1% in the gynecology clinic.[16] Specificity for the anxiety sub-scale ranged from 86.5% in the gynecology clinic to 90.6% in the community sample, while specificity for the depressive sub-scale ranged from 86.6% in the medical ward and surgical ward to 91.1%. It consists of seven depression items and seven anxiety items. It enables one to establish the presence and severity of both depression and anxiety while giving the scores for each item. Considering the level of literacy in the English language among the attendees, the Hausa version of this instrument was also been used in the study. Earlier, the HADS Hausa version was used in a study of depression among Human Immunodeficiency Virus (HIV) / Acquired Immunodeficiency Syndrome (AIDS) outpatients in Aminu Kano Teaching Hospital.[16,17] The instrument was translated into Hausa by an expert in translation, taking cognizance of the semantic and linguistic differences.

The study aimed to evaluate the prevalence of abnormal "Pap tests" in post-natal patients and the psychological experience of patients undergoing "Pap tests".

Materials and Methods

The study was performed in Aminu Kano Teaching Hospital (AKTH) of Kano metropolis, Nigeria. Cervical screening is done on Fridays from 8.00 am to 2.00 pm, with an average of fifty patients attending.

Study design

This was a cross-sectional study. Hospital Anxiety and Depression Scale (HADS) questionnaires were administered to assess the presence of depressive and anxiety symptoms.

Sample size estimation

Sample size estimation was performed using the formula:

$$N=z2pq/E2$$

where:
N = minimum sample size
Z = 1.96(standard normal deviate for normal 95% Confidence Interval (CI) level)
p = proportion of population with condition studied (10%) [2]
q = complementary probability (100-p)=(100-10)=90%
E = precision required (tolerable sampling error) = 5%

Therefore:

$$N=(1.96)2(10\%)(100-10)/52=138$$

Given the attrition rate of 10%, approximately 152 patients were required and involved in the study.

Inclusion criteria

All newly registered postnatal patients for cervical cancer screening that are sexually active and at least 3 years after sexual debut, from the age of 18 years and up to 49 years, and who gave consent were recruited for the study.

Exclusion criteria

Patients who declined to give consent, those too ill to take part, pregnant women, and patients who had previous treatment for cervical dysplasia.

Sampling technique

The process was clearly explained to the patients. However, patients were given the right to choose to participate in the study or opt-out. All patients who consented to participate signed a written informed consent. The sample was drawn using a systematic random sampling method from all the patients who booked for cervical cancer screening for the first time, who met inclusion criteria, and who accepted to take part in the study. The sampling ratio was 152/500 (500 being the number of patients

averagely seen over the study period of 10 weeks based on an average of 50 newly registered patients, 50×10=500). The sampling ratio was 1:3, and the sampling interval: every third patient was recruited till a total of 152 respondents was obtained. The list of all the newly registered patients forming the sampling frame and the starting point on the list was chosen at random using a random number table. The counseling and psychological support before, during, and after the interview was given, and the procedure was performed by a research assistant. The patient was counseled. A smaller group of patients was interviewed prior to the study in order to evaluate the applicability of the instruments. A pre-tested questionnaire was administered to the patients by the researcher to evaluate socio-demographic and clinical information prior to the test.

Table 1. Socio-demographic data.

Variables	Frequency	Percentage (%)
Age		
18-28	40	25.97
29-39	75	48.70
40-49	39	25.33
Total	154	100
Marital status		
Married	141	91.56
Divorced	5	3.25
Widowed	7	4.54
Separated	1	0.65
Total	154	100
Religion		
Islam	140	90.91
Christianity	12	7.79
Others	2	1.3
Total	154	100
Smoking		
No	153	99.35
Yes	1	0.65
Total	154	100
Occupation		
Employed	38	24.68
Unemployed	116	75.32
Total	154	100
Education		
None	6	3.9
Islamic	64	41.56
Lower	39	25.32
Higher	45	29.22
Total	154	100
Tribe		
Hausa	109	70.78
Fulani	15	9.74
Yoruba	6	3.9
Igbo	6	3.9
Others	18	11.68
Total	154	100
Parity		
Primipara	26	16.88
Multipara	52	13.77
Grandmultipara	76	49.35
Total	154	100

HADS questionnaires were administered to assess the presence of depressive and anxiety symptoms. It consists of seven depression items and seven anxiety items. It enables one to establish the presence and severity of both depression and anxiety while giving the scores for each item. HADS has a minimum score of 0 and a maximum score of 21. A score of 0-7 is considered a non-case, 8-10 as a doubtful case, and 11-21 as a case.[11]

The patients were asked to empty their bladder. The procedure was detailed to the patients. Complete clinical information, including the last menstrual period, pregnancy, hormones used, and history of abnormal bleeding, was obtained and documented. The procedure was performed by a nurse trained to obtain "Pap" smears. Patients were placed in a dorsal position. The vulva was examined, and a disposable plastic speculum was inserted into the vagina to enable adequate visualization of the cervix. The sampling of the transformation zone was performed using Ayres's spatula placed into distal endocervical canal, scraping firmly the cervical surface by completing one full rotation. Obtained sample was spread over one half to 2/3 of the previously labeled glass slide and fixed by 90% of alcohol. After the test was performed, the speculum was removed. The slides were sent to the pathology laboratory for staining and cytological evaluation.

One hundred and fifty-four (154) women that completed six weeks postpartum were recruited from October 1 to November 1, 2019.

Data analysis

All generated data was analyzed using computer-based EPI Info, version 7.0.9.34. A $p<0.05$ was considered statistically significant.

Information obtained from the study and findings from the data analysis were presented in tabular, graphical, and diagrammatical forms using different variables.

Ethical considerations

Approval for the study was obtained from the ethical committee of the AKTH, Kano State, Nigeria.

Results

The majority of the patients were in the age group of 29-39 years, 75 (48.7%). The age ranged between 18 and 49 years, with a mean age of 34.24 years ± 6.957 SD (Table 1). The mean age of marriage was 19.99 years ± 5.287 SD. The age of coitarche was between 10-35 years, and 105 participants (68.18%) had their first sexual contact before the age of 20 years. However, 136 (88.31%) of participants were in their first order of marriage (Table 2).

The "pap "smear results were positive in 3 (1.95%) patients: LSIL was found in 2 (1.30%) and High-Grade Squamous Intraepithelial Lesion (HSIL) in 1 (0.65%) of patients (Table 3). The prevalence of positive pap smears in postnatal patients is 1.95%.

Table 2. Risk factors.

Variables	Frequency	Percentage (%)
Age of first sexual contact		
10-20	105	68.18
21-30	38	24.68
31 and above	11	7.14
Total	154	100
Number of marriages		
1	136	88.31
2	12	7.79
3 and above	6	3.90
Total	154	100
Number of sexual partners in one year		
1	153	99.35
2	1	0.65
Total	154	100
Smoking		
No	153	99.35
Yes	1	0.65
Total	154	100

Age of marriage				
Mean	SD	Min	Max	Range
19.987	5.287	10	35	25

The majority of women were anxious, 78 (50.65%), and depressed, 88 (57.14%), prior to the Pap testing (Table 4). However, no statistical association was found between risk factors, anxiety, and the number of positive smears in our sample group (HADS questionnaires to assess anxiety and depression in this study were given prior to the "pap" test, and our participants were not aware of their results) (Table 5). In this study, 91(59%) of participants were aware of "pap" smear. They had information from media, 41 (45%), medical personnel, 24 (26.37%), as well as patients themselves, 26 (28.57%). A statistically significant difference was observed between anxiety and "Pap-test" by age, parity, and a statistically significant association by source of awareness in this study. However, no significant association was found between depression and risk factors (Table 6).

Discussion

The prevalence of positive "pap" smears in this study was 1.95% in postnatal patients, with a ratio of LSIL to HSIL of 2:1. It is lower compared to a study performed among post-partum Nigerian women, with a reported prevalence of 3%.[11] The possible explanation for this finding is that this study did not represent all women of Kano State, especially low-income women, receiving free services in the state hospitals. The mean age in the study was 34.24, and it corresponds to the mean age of pre-invasive lesions of the cervix of 36.5 years in non-pregnant Nigerian women.[11] The age of the patient diagnosed with HSIL was 40 years in this study.

The majority of smears (71.43%) were negative, and 26.62% showed an inflammatory change. It can be explained that postnatal screening is performed in young women six weeks postpartum, who may not necessarily complete postpartum recovery. As the prevalence of positive "pap" smears six weeks postpartum in our study was low, is the postpartum period still the best time to perform a routine cervical screening? Can the strategy be modified in our center to perform at different times?

Cervical cancer screening is an important preventive measure aiming at the reduction of disease burden, but involves patient exposure and some invasive procedures, such as cervical examination and sampling. "Pap" smear procedure may lead to psychological distress (anxiety and depression), hence lack of follow-up and adherence to the cancer screening program. In this study, 50.65% and 31.17% (one-third of patients) were anxious and very anxious, respectively, and 57.10% were depressed prior to the procedure. A high level of anxiety of 74.5% was found in China.[15] The twenty-item state anxiety scale of the State-Trait Anxiety Inventory (STAI-S) was used, which has been adopted to identify anxiety in the Chinese population.[15] The HADS instrument has been validated for use in Nigeria.[14] A statistically significant difference was observed between anxiety and "Pap-test" by age, parity, and a statistically significant association by source of awareness in this study. There were more anxious patients regarding the test among older patients, aged 29 years and above (77%), and among grand-multiparous women, of parity 5 and above (53.9%). They had more fear of having cervical cancer. In comparison to the UK study, where the HADS instrument was used, statistically significant differences were observed between anxiety and HPV testing by ethnicity and smoking.[1] In our study, 45.46% of patients were uneducated. They may not even ask for further information regarding the test or diagnosis. Increasing the role of medical practitioners in educating them will be needed. The majority were anxious among lower educated patients, though one-third of patients were still anxious among highly educated participants. However, no statistically significant association was found between anxiety and education. An incomplete understanding of the procedure and anticipation of having an abnormal pap result may lead to anxiety and preparation to cope with possible negative situations. Pre-procedure explanation, gentle technique, post-procedure counseling, follow-up, and continuous education of the patients may help to reduce negative psychological reactions to the "pap" test.

The awareness of "pap" smear in this study was 59% and involved both media (45%), medical personnel (26.37%), and patients themselves (28.57%), and anxiety was higher among 57% of participants. However, the association was not significant. More anxious patients were among those who received information from media and other patients, and the finding was significant. The role of hospital education in health talks, and information given as booklets, posters, or videos is still very important. Religious belief is very important in order to cope with bad news but no statistically significant association was found in this study.

Table 3. Pap smear result.

Variables	Frequency	Percentage (%)
Negative	110	71.43
Inflammatory	41	26.62
LSIL	2	1.30
HSIL	1	0.65
Total	154	100

LSIL, Low-Grade Squamous Intraepithelial Lesion; HSIL, High-Grade Squamous Intraepithelial Lesion.

Table 4. Patient anxiety and depression assessment.

Variables	Frequency	Percentage (%)
Anxiety		
0-7	28	18.18
8-10	78	50.65
11-21	48	31.17
Total	154	100
Depression		
0-7	56	36.36
8-10	88	57.14
11-21	10	6.49
Total	154	100
Parity		
Low parity (0-4)	76	2
Grandmultiparous (5-20)	75	1

Table 5. Association between risk factors and Pap smear result.

Variables	Negative	Positive	p	Chi square
Age of coitarche				
Below 20 years	101	4	0.929289	0.0079
Above 20 years	48	1		
Depression score				
Normal	55	1	0.620005	0.2459
Abnormal	96	2		
Parity				
Low parity (0-4)	76	2	0.575	0.314
Grandmultiparous (5-20)	75	1		

Table 6. Associations between anxiety, depression, and other risk factors.

Anxiety		Risk factors		Chi-square	p
Age					
HADS		18-28 years	>29 years	5.0733	0.24
0-7		12 (7.27) [3.07]	16 (2.73) [1.08]		
>8		28 (32.73) [0.68]	98 (93.27) [0.24]		
Religion					
HADS		Islam	Christianity	0.0011	0.9736
0-7		25 (25.45) [0.01]	3 (2.55) [0.08]		
>8		115 (114.55) [0]	11 (11.45) [0.02]		
Education					
HADS		Lower	Higher	1.6762	0.1954
0-7		17 (19.82) [0.4]	11 (8.18) [0.97]		
>8		92 (89.18) [0.09]	34 (36.82) [0.22]		
Parity					
Hads		Lower parity	Grand multipara	5.9115	0.0150
0-7		20 (14.18) [2.39]	8 (13.82) [2.45]		
>8		58 (63.82) [0.53]	68 (62.18) [0.54]		
Awareness of pap smear					
HADS		No	Yes	1.0879	0.2969
0-7		9 (11.45) [0.52]	19 (16.55) [0.36]		
>8		54 (51.55) [0.12]	72 (74.45) [0.08]		
Source of awareness					
HADS	Media	Patient	Medical personnel	7.1255	0.05
0-7	10 (8.56) [0.24]	1(5.41)[3.61]	8 (5.01)[1.78]	Df: 2	
>8	31 (32.44) [0.06]	25 (20.57)[0.95]	16 (18.99)[0.47]		
Depression		**Risk factors**		**Chi-square**	**p**
Age					
HADS		18-28 years	>29 years	0.0302	0.8621
0-7		15 (14.5) [0.01]	41 (48.45) [0.00]		
>8		25 (25.45) [0.01]	73 (72.55) [0.00]		
Religion					
HADS		Islam	Christianity	0.4041	0.52498
0-7		52 (50.91) [0.02]	4 (5.09) [0.23]		
>8		88 (89.09) [0.01]	10 (8.91) [0.13]		
Education					
HADS		Lower	Higher	1.7941	0.180429
0-7		36 (39.64) [0.33]	20 (16.36) [0.81]		
>8		73 (69.36) [0.19]	25 (28.64) [0.46]		
Parity					
HADS		Lower parity	Grand multipara	2.3454	0.1256
0-7		26 (21.72) [0.84]	20 (24.28) [0.75]		
>8		42 (46.28) [0.4]	56 (51.72) [0.35]		
Awareness of pap smear					
HADS		No	Yes	0.001	0.9753
0-7		23 (22.91) [0.00]	33 (33.09) [0.00]		
>8		40 (40.09) [0.00]	58 (57.91) [0.00]		
Source of awareness					
HADS	Media	Patient	Medical personnel	0.0483	0.9762
0-7	15 (14.87) [0.00]	9 (9.43) [0.02]	9 (8.70) [0.01]		Df: 2
>8	26 (26.13)[0.00]	17 (16.57) [0.01]	15 (15.30) [0.01]		

Conclusions

Anxiety is the common reaction to any procedure, investigation, or delivery of results. An abnormal response needs additional support, counseling, follow-up, and a clear explanation of the plan of management. Patients with high anxiety scores will benefit from multidisciplinary management.

Limitations

This study will not represent all women of Kano State, especially low-income women, receiving free services in the state hospitals.

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