



■ Original Research Article

Is postnatal cervical smear of significant utility in detecting intraepithelial neoplastic changes?

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Abstract

Background: Opportunistic cervical screening is common in the postnatal period. This study aims to evaluate its utility in detecting cervical intraepithelial neoplastic changes. **Method:** A review of cervical smears diagnosed from 3 teaching hospitals in northwestern Nigeria between January, 2017 and December, 2019; comparing the rate of positivity of postnatal smears with non-natal smears. **Results:** 4,717 smears were reported in the study period 20% (941) of which were post-natal smears while the remaining 80% (3,776) were non-natal smears. Of these only 1 (0.1%) of the 941 postnatal cases screened was positive while 86 (2.3%) of the 3,776 non-natal smears were positive; giving a statistically significant higher rate of positivity ($p = 0.00001$). **Conclusion:** Targeting women in the postnatal period may not be a very useful strategy in combatting the scourge of cervical cancer due to high likelihood of not only false negative smears but also because of very low coverage.

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Introduction

Cervical cancer arises from dyskaryotic lesions of the cervix. These lesions are a direct infection of the transformation zone of the cervix by one or more high risk human papilloma virus subtypes especially types 16 and 18.¹ Cervical cancer has remained a significant cause of cancer-related deaths in most parts of the developing world, including Nigeria. With the use of cervical screening the incidence has been brought down to as low as 9.6 per 100,000 women in countries with high human development index (HDI) compared to as high as 26.7 per 100,000 women in countries with low HDI.² This has been achievable with the institution of screening programs.

In Nigeria there is absence of such coordinated screening programs and this may explain the relatively still high incidence of the cancer. Most of the smears done are opportunistic or when the women are symptomatic. The period targeted by most centers, where facilities for screening are available, is usually during the postnatal period. Thus the aim of this study is to evaluate the utility of screening women in this period for detection of dyskaryotic cervical changes.

Materials and Method

Laboratory records for all females who had cervical screening between January, 2017 and December, 2019 in a teaching hospital in northwestern Nigeria and between January and December, 2019 in 2 other teaching hospitals also in northwestern Nigeria were retrieved from their archives. The ages, indications for screening (categorized as postnatal or non-natal) and cytopathologic diagnoses were extracted from their records. These were then compared and presented in tabular form and ensuing data was managed with SPSS (version 22)

Result

In the study periods three thousand four hundred and ninety four (3,494) Pap smears were carried out in the first teaching hospital, 261 in the second and 962 in the third, giving a total of 4, 717 women screened. As shown in Table 1, of the total number screened, approximately 20% (941) were post-natal smears while the remaining 80% (3,776) were non-natal cases. Only 1 (0.1%) of the 941 postnatal cases screened was positive while the remaining 940 representing 99.9% were negative for dyskaryosis. In contrast to this, 86 (2.3%) of 3,776 non-natal

smears were positive; giving a statistically significant higher rate of positivity ($p = 0.00001$).

Table 1: Frequency of positive and negative smears in the three centers

Screening period	n	%
Postnatal		
Positive	1	0.1
Subtotal	941	100
Non-natal		
Positive	86	2.3
Negative	3690	97.7
Subtotal	3776	100
Total	4717	100

Screened women with positive smears ranged in age from 23years to 80 years with mean age of 43 ± 1 years. Over half (55.8%) of the cases were Low Grade

Table 2: Frequency of positive and negative smears in the three centers

Type of dyskaryosis	n	%
LSIL	48	55.8
ASCUS	17	19.8
HSIL	19	22.1
SCC	2	2.3
TOTAL	86	100

Squamous Intra-epithelial Lesions (LSIL), followed in frequency by High Grade Squamous Intra-epithelial Lesions (HSIL) accounting for 22.1% of the 86 cases;

Atypical Squamous Cells of Undetermined Significance (ASCUS) which accounted for 19.8% of the cases and 2(2.3%) cases of Squamous Cell Carcinoma (SCC). See Table 2. As shown in the bar chart (Figure 1), while indication for doing the Pap smear was not stated in the majority of cases, bleeding per vaginam was the most commonly stated indication.

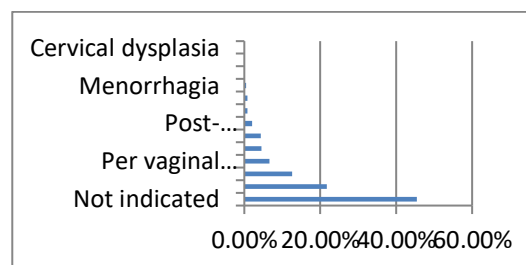


Figure 1: Bar chart of indications for cervical smears

Routine screening, as an indication, came a distant second. Other indications included cervical rash, dyspareunia and menorrhagia among others.

Discussion

Positivity rate of postnatal cervical smears in this study was 0.1%. This is much lower than the 2.6% reported by Olatunbosun et al³ and the 3% by Ago et al.⁴ However, these were from small sample sizes. In addition to this, in the latter study, all the cases were LSIL and were negative by colposcopy and biopsy. This suggests the cases might have been false positives.

Similar high false positivity rate is discernible from the study by Ma et al⁵ of 5,152 pregnancy-related smears. Even though abnormal smears constituted 9.41% of their cases, none of the smears reported as atypical squamous cells (ASC) or as low-grade squamous intraepithelial lesions (LSIL) were subjected to confirmatory biopsy. In addition to this all the 7 cases diagnosed as atypical glandular cells (AGC) by Pap smear were all negative by histology; and all the cases of high grade squamous intraepithelial lesion (HSIL), Squamous cell carcinoma (SCC) and AGC were found to be negative by 3 month's follow up. These findings also suggest high false positivity rates.

In Nigeria, the prevailing thought about the postnatal smear has been that in the absence of a national screening program this period may be the only opportunity available for screening. However, the failure of this strategy is only too obvious from GLOBOCAN data which estimated 14,089 new cases were diagnosed in the year 2008 and 14,943 in 2018.^{6,7}

The reasons for this failure may not be farfetched. In the largest of the three hospitals in which this study was conducted, average monthly delivery rate is about 799 per month.⁸ If all the women are screened, this would give 9,588 potential smears yearly; yet in this facility, including referrals from other neighboring states, the average yearly postnatal Pap smear rate is about 308 accounting for only about 3.2% of potentially screenable women. Secondly, only about 10.1% of deliveries in the state are taken in the only facility where Pap smear screening is done,⁹ further reducing the rate to about 0.32% of the screenable population. Thirdly, with a rate of home delivery as high as 78.3% in rural areas and 38.1% in urban areas as reported by Adewuyi et al¹⁰ in a nationwide study, only an insignificant number of

screenable women would be reached by such opportunistic approach.

The timing of the screening in the postnatal period is also important. In a study¹¹ of 139 women who had normal pre-natal smears, inflammation was the most frequent finding from 4th week of postnatal screening to the 8th week, with the number of affected women dropping from 24 to 11 women. Only a case of atypia, representing 0.7% of the 139, was reported. The woman remained so into the 6th week, which incidentally coincides with the end of the postnatal period when women are seen for follow-up, but by the 8th week no atypia was found. This raises the possibility of over-diagnosis of atypia at the 6th week postnatal screening visit. Similarly, following a systematic review of 140 manuscripts on the subject matter, Levitt and co-workers concluded that 'Although delaying the postpartum Pap smear until 8 weeks reduces the proportion of inflammatory smears, it is uncertain whether a Pap smear is of benefit to postpartum women'¹⁵

To obviate this dilemma others have suggested taking the smears at the 3rd postnatal month; anticipating the cervix would have involuted. However, the study by McLaren¹² has shown that the involution of the cervix may take longer than that, and especially in women with erosions. This is evidenced histologically by a high degree of stromal and glandular hyperplasia persisting up to the 20th week.

Such morphologic features, especially when associated with reparative nuclear changes may result in misinterpretation as Atypical Glandular Cells (AGC). In the study by Chheng and colleagues¹³ only 0.26% (35) of 13,361 pregnancy and postpartum-related smears were reported as AGC. Eventually on follow up with colposcopy, biopsy or repeated smears only 5 (0.04%) were found to still have cellular dyskaryosis. These findings suggest high false positive rates, as earlier noted. Cells that can mimic atypical cells that have been reported in the literature include: Decidual cells, trophoblasts, and Arias-Stella reactions. Among the 5,152 smears studied by Ma et al,⁵ they found navicular cells in 62.4% of smears, decidual cells in 15.2%, reactive glandular cells in 7.16%, and trophoblastic cells in 1.07% of the smears. This underscores the high likelihood of misinterpretation of these as atypical cells.

In contrast to postnatal screening which gave a prevalence of 0.1% in the index study, the 2.3% prevalence found for non-natal smears, and reflecting a wider population, is comparable to the 2.14% reported by a similarly large study of 4,478

women in Northcentral Nigeria.¹⁴ These findings underscore the futility of persisting with postpartum screening as a panacea for the increasing incidence of cervical cancer in the country. Though it might also be argued that these women were also screened on an “opportunistic” basis, the difference is the greater likelihood of achieving a more reliable diagnosis, free of confounders of the postnatal smear. Dysplastic changes of the cervix are generally asymptomatic. Thus, the indications for requesting for a Pap smear as found in this study including vagina discharge (21.7%), abnormal per

vagina bleeding (7.6%); dyspareunia (0.8%), vagina mass (0.2%) among others only further reflect the predominantly opportunity-based screening still in practice. To corroborate the need for a change in this strategy, about 92% of women positive for atypical changes in this study were asymptomatic.

Following from the foregoing, it may be concluded that while opportunistic screening is still the pillar of cervical cancer prevention in Nigeria, doing so in the postpartum period may not be very useful due to high likelihood of not only false negative smears but also because of very low coverage.

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