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Determinants of adequate follow-up of an abnormal Papanicolaou result among Jamaican women in Portland, Jamaica

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Abstract

Background—Among Jamaican women, cervical cancer is the second leading cause of cancer mortality but factors that facilitate follow-up of women receiving abnormal Pap smear results are not known. We examined whether socio-demographic factors, factors reported by the women, and assistance received for follow-up facilitate adequate follow-up of abnormal Pap smears.

Methods—One hundred-and-twenty-one women who had abnormal Pap results during June 1998–September 2005 in Portland, Jamaica were interviewed to identify determinants of adequate follow-up. Chi-square, t-test and multivariable logistic regression analysis were used to identify determinants.

Results—Only half of the women in this sample sought adequate follow-up. These women had a lower number of surviving children, higher monthly income, and perceived the cost of services to be inexpensive. Advice about the timing of the follow-up activity and the next step to take by the healthcare workers were significant determinants of adequate follow-up. Women who received advice on the timing of follow-up were almost six times (adjusted OR: 5.99, 95% CI: 1.17, 30.66, $p < 0.05$) more likely to seek adequate follow-up after adjusting for other factors.

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Conclusions—Perceived low cost of services as well as assistance provided by healthcare workers regarding follow-up action helps to facilitate adequate follow-up of abnormal Pap smear results.

Keywords

Abnormal Pap smear; Adequate follow-up; Advice on Follow-up; Women; Jamaica

Introduction

Cervical cancer is the second most common cancer among women worldwide [1,2,3]. Women living in the Caribbean countries of Barbados, Trinidad and Tobago, Dominica and Jamaica are four times as likely to die from cervical cancer as women living in the United States [4]. Cervical cancer is the second leading cause of cancer mortality among Jamaican women [5]. In 2002, there were 383 incident cervical cancer cases and 151 deaths per 100,000 women in Jamaica [6]. In the same year, worldwide, approximately 493,000 new cases of cervical cancer were diagnosed and 274,000 deaths occurred [1].

Papanicolaou (Pap) smear screening for cervical cancer is the first step in preventing morbidity and mortality of cervical intraepithelial neoplasia and cervical cancer [7]. Pap smears have high specificity and moderate sensitivity in detecting high-grade lesions or cancers in the cervix [8]. Although Pap smears are highly recommended for women of childbearing age, low cervical screening coverage is still a problem in Jamaica [4]. During 2000, the target population for cervical screening in Jamaica was 457,011, yet only 15,172 women (3.32%) had a Pap smear [9]. Abnormal Pap smear results are followed by further testing such as a colposcopy or a biopsy and then consequently treatment of the cervix [7]. Compliance to all necessary steps is problematic for many developing countries; patient losses of 10% to 25% at each follow-up visit are common [10]. The failure to adequately follow-up with testing and treatment defeats the initiative of screening and intention to prevent cervical cancer.

The Pan American Health Organization has reported barriers to adequate follow-up [4]. Staff shortages in government laboratories often create a long delay before Pap smear results are received by women; hence the diagnosis and treatment are not always automatically scheduled and leads to lack of timely and appropriate follow-up care [4]. Geographic access to the health facilities, income, costs, and education are also cited as reasons for failure to follow-up [4,11]. Studies from the U.S. have shown that demographic and psychosocial factors as well as factors that pertain to the functioning of the health care system are barriers to adequate follow-up of an abnormal Pap smear result [12,13].

Little is known about failure to follow-up after an abnormal Pap smear result among women in Jamaica or the Caribbean. No studies are available to identify the factors that facilitate adequate follow-up of an abnormal Pap smear result among women in this region of the world. Although, in Jamaica, public health facilities are fairly equitably distributed around the island, the long queues for services, inadequate quality of healthcare, and the frequent lack of supplies, adversely affect healthcare promotion including Pap smear screening and treatment [14].

Aday and Andersen's, 'Behavioral Model of Health Services Use' [15] has been used frequently to understand patient healthcare utilization behavior [16]. This model involves three major categories that are related to a patient's motivation to seek health services: (1) predisposing factors such as demographic, social structural, or attitudinal-belief factors; (2) enabling factors such as family resources or characteristics of the community; and (3) need

factors such as perceived or evaluated illness [15]. We used this theoretical model to understand the healthcare utilization behavior of Jamaican women with respect to follow-up of an abnormal Pap smear result. The objective of this study was to identify the factors that facilitate adequate follow-up of an abnormal Pap smear result among Jamaican women in the parish of Portland. We hypothesized that predisposing factors such as socio-demographic factors, social structure, and health beliefs, and enabling factors such as availability of resources facilitate adequate follow-up of an abnormal Pap smear result among Jamaican women. Previous studies have shown that income or cost can be a barrier for women to seek further care [17,18]. Other studies demonstrate that guidance from a healthcare provider [19] or other assistance methods such as counseling or reminder calls to patients are related to women's adherence to follow-up [12,20,21]. In this study we examined the association between such factors and adequacy of follow-up of an abnormal Pap smear result among women in Portland, Jamaica.

Materials

The study was conducted in the parish of Portland, which is located in the northeastern area of Jamaica and is part of the "North East Regional Health Authority." The population of Portland is approximately 82,000 and is divided into three regions: Western (Buff Bay District), Central (Port Antonio District), and Eastern (Mandeville District). The public health centers are government-sponsored and the majority of the women first access health care through these centers. These health centers do not have laboratories to analyze Pap smears. Pap smears are sent to the national laboratory in the capital city of Kingston. The results are then sent back to the largest public health center in each region for the parish and subsequently distributed to the smaller centers. Once the results are received by the public health center, the women are contacted. If a woman receives an abnormal Pap result, there are two main options for follow-up care: public hospitals or private doctors, the later being more expensive.

Information about the health status of women in Jamaica is scarce. According to the Jamaican Ministry of Health, in 2005, female life expectancy was 78.45 years [22]. Nationwide, total fertility rate was reported to be 2.4 per woman but was much higher (3.5 per woman) in the northeast region of the country [22]. The leading causes of maternal mortality in the North Eastern Region are severe pre-eclampsia and other complications related to labor [22].

Methods

We accessed medical records (in retrospect) at all 13 public health centers within the parish of Portland and identified a cohort of 136 women who had abnormal Pap results (defined as cervical squamous intraepithelial neoplasia 1, or CIN 1, or above) during June 1998 to September 2005. All these women were advised to follow-up the abnormal pap result (with further test(s) or treatment) by a doctor or nurse. These women were 19 years or older at the time of the interview. Informed consent was sought by the interviewer before starting the interview. All participants were informed about the risks and benefits involved. Participants were also notified of their right to stop participation at any time. Women were interviewed at the clinics during May–August 2006. We excluded 15 women from the analysis (all with incomplete interviews, since 14 needed medical attention and the interview had to be interrupted and 1 simply did not complete the interview). For our final analysis, we had a sample of 121 women.

The study protocol was approved prior to the beginning of the study by the Institutional Review Board of the University of Alabama at Birmingham, the Advisory Panel of Ethics

and Medico-Legal Affairs in the Jamaican Ministry of Health, the North East Regional Authority of Jamaica, and Portland Public Health Services. Participation in the study was completely voluntary.

Study Variables

The adequacy of follow-up of an abnormal Pap smear result was defined on the basis of commencement of the recommended test (such as another Pap test, further test such as colposcopy, biopsy, or endocervical curettage) or treatment as advised by a doctor/nurse. Follow-up action was defined as adequate if the woman followed the provider's advice and completed the recommended follow-up action, whether it was for a second Pap smear, further testing, or further testing and treatment. Follow-up action was defined as inadequate if the woman did not complete or only partially completed the recommended follow-up action by the provider. For example, an incomplete follow-up would be a case where the woman was advised to seek further testing but failed to do so. A partially completed follow-up would be a case where the woman did receive further testing, after which she was advised to receive treatment but failed to do so. Data for socio-demographic factors such as age, number of surviving children, marital status, monthly household income, employment status, and education were also collected. Women were asked about the number of children they had in the age group of 0–5 years, 6–10 years, 11–16 years, and older than 16 years. These responses were computed to determine the total number of children a woman had at the time of the interview. Women were categorized into two marital groups, 'Never married/single=0', 'Ever married/married, divorced, widowed=1'. Women were asked about their occupation; the responses were categorized as 'Unemployed=0', 'Employed=1'. Levels of education were categorized as 'Primary/some primary/completed primary=0', 'Secondary/some secondary/completed secondary=1', and 'Above secondary/technical training/university=2'.

Data on factors that could be associated with inadequate follow-up of abnormal Pap smear results such as payment of registration fee (no=0, yes=1), perceived cost of services (not expensive=0, expensive=1), and fear of adverse outcome (no=0, yes=1) were collected. Question regarding other possible barriers, including expensive transportation, could not miss work, didn't know where to go or who to call, child care not available, or service not available at the local clinic, were also collected. If a woman responded 'yes' to experiencing any of those barriers, then inconvenience was coded as 'yes=1', and 'no=0'.

Assistance with follow-up action was determined through seven components of assistance. Women were asked if they received follow-up advice from 'Nurse/Community Health Worker/Other=0' or 'Doctor=1'. Women were also asked, 'Did the doctor or nurse explain what the results meant/explained results?', 'Did the doctor or nurse explain when you should do this/advised timing of follow-up action?', 'Did the doctor or nurse explain what you needed to do next/advised next step?', 'Did the doctor or nurse answer your questions about your test results and the treatment/answered questions?', 'Did you tell the doctor or nurse you were concerned about the cost of testing, treatment or transportation/discussed the logistics of the follow-up action?', and 'Did the doctor or nurse talk to you about the problems that you might encounter when getting further care/discussed potential barriers to follow-up action?'. Responses were dichotomized as 'No/somewhat=0', 'Yes=1'.

Data Analysis

Independent sample t-test and chi-square test were used to identify socio-demographic factors, reported factors for inadequate follow-up, and assistance with follow-up action that were significantly associated with the adequacy of follow-up action. Multivariable logistic regression analysis [23] was used to determine the odds ratios of adequate follow-up action

for the women who received assistance with follow-up action to those who didn't after adjusting for factors that were significantly associated with the adequacy of follow-up action. Two-tailed test with $\alpha = 0.05$, $p < 0.05$, 95% confidence interval (CI) was used. Fisher's exact test was used if any cell count was less than 5. Two types of logistic regression models were built: unadjusted/crude model and adjusted/reduced model (adjusted for the significant socio-demographic variables). Data were analyzed using SPSS 13.0 [24].

Results

Of the 121 women who had abnormal Pap results during Jun. 1998 to Sept. 2005, only 51.2% had adequate follow-up while the rest of the women (43.8%) inadequately followed-up the recommended advice (another pap test, further test such as colposcopy, biopsy, or endocervical curettage, or treatment) (Table 1).

At the time of the interview women were 20–81 years old (mean $\pm$ SD: 36.8 ± 9.7 years) (Table 1). The number of surviving children of the women ranged from 0 to 8 (mean $\pm$ SD: 3.2 ± 1.8). A smaller proportion of women were single/never married (39.6%) compared to the 60.3% who were married, divorced, or widowed. Monthly income ranged from J\$530–60,000 (mean $\pm$ SD: J\$9,927 $\pm$ J\$10,328, conversion US\$ 1 = J\$70.92). Approximately 26% of the women were unemployed. The majority (76.8%) of the women had secondary school education.

When the data were stratified by the nature of the follow-up action we found that women who sought adequate follow-up had lower number of surviving children (2.8) and higher monthly income (J\$11,947) than the women who received inadequate follow-up, $p < 0.05$ (Table 1).

We analyzed the data to identify factors such as registration fee, perceived cost of services, inconvenience (expensive transportation, could not miss work, did not know where to go or who to call, child care not available, or service not available at the local clinic), fear of adverse outcome that affected adequate follow-up action (Table 2). More than half (56.6%) of the women who had inadequate follow-up and the majority (77.4%) of the women who had adequate follow-up perceived the cost of services to be expensive. The association between perceived cost of services and follow-up action was statistically significant, $p < 0.05$. Providers at the public health clinics may be able to offer assistance for follow-up action, but not all women who received abnormal Pap results were also given specific advice from their provider. We analyzed the association between different types of assistance with follow-up and follow-up action (Table 3). Majority of the women (95.1%) who sought adequate follow-up had received advice about the timing of the follow-up action, $p < 0.05$. Similarly, majority of the women (98.3%) who sought adequate follow-up had received advice about the next step that should be taken, $p < 0.05$. Number of surviving children, monthly household income, perceived cost of services, receiving advice about timing of follow-up action, and receiving advice about next step were significant determinants of follow-up of abnormal Pap results in this sample.

Further, we analyzed data to determine the odds ratios of adequate follow-up action for the women who received advice about the timing of follow-up action and the next step to be taken compared to women who did not receive advice. Women who received advice about the timing of the follow-up action were almost six times (adjusted OR: 5.99, 95% CI: 1.17, 30.66, $p < 0.05$) more likely to seek adequate follow-up after adjusting for number of surviving children, monthly income, and perceived cost of services compared to those who did not receive such advice.

Discussion

Only half of the women in this sample had sought adequate follow-up care, and these women had lower number of surviving children and higher monthly income. We also found that women who did not seek follow-up perceived that cost of services was expensive. Previous studies with different minority groups in the U.S. have reported income or social deprivation as major determinants of not only Pap screenings [25] but also of all aspects of the cervical cancer prevention continuum, including treatment and survival [17,18,26,27]. Such studies support our finding that perceived cost of services and high income may help facilitate adequate follow-up of an abnormal Pap smear result.

Just as physician recommendations have been shown to positively influence the uptake of cervical cancer screening [28–32], our study found that advice from the provider (doctor or nurse) about the timing of the follow-up action to be taken and advice about the next step were significant determinants of adequate follow-up. Women who received advice about the timing of the follow-up action were almost six times more likely to seek adequate follow-up action. This finding is highly relevant in the given context. The process of obtaining follow-up care can be somewhat daunting for women living in Portland. As mentioned previously, women in Portland who receive abnormal Pap results have the option to utilize public or private providers for follow-up care. In the past, patients were referred to St. Ann's Bay Hospital, a public provider in the parish of St. Ann, located two hours away from Port Antonio, the largest city in Portland. However, during the time of this study, this hospital no longer offered the necessary follow-up care. Currently, the University Hospital of the West Indies (located in Kingston which is three hours away from Port Antonio) is the only public provider for follow-up care for these women. Distance, travel time, cost, etc. are potential deterrents to adequate follow-up at this health facility for the women. In such circumstances, advice or guidance from a healthcare professional about when and how to take the necessary next step can considerably improve adequacy of follow-up action. Private doctors are available in Portland but their services are more costly. Most referrals through the health clinics are made to the public hospitals. If the referrals are complemented with a step-by-step follow-up guidance plan from a healthcare professional (doctor or nurse) the adequacy of follow-up can be improved substantially. Indeed, previous studies have demonstrated that if the clinician engaged the patient in a dialogue about the importance of follow-up and provided her with a clear understanding of the process and timeline surrounding follow-up recommendations, the patient felt more willing to adhere to the advice [19]. Counseling, case management, logistics management, and even telephone reminders of follow-up appointments are known to improve adherence to follow-up recommendations [12,20,21]. Our study findings confirm that follow-up advice from a healthcare provider motivates women to proactively pursue follow-up of an abnormal Pap result.

This study provided much-needed data regarding the adequacy of follow-up for abnormal Pap smears among a population that has not been studied previously. The findings from this study indicate that there is a need in Portland for a more comprehensive strategy to convince and encourage women to receive follow-up care after receiving an abnormal Pap result. A review study revealed that nurses can play a crucial role in facilitating adherence to recommendations for follow-up [13]. In Portland nurses are often the first contact at the point of entry into the public healthcare system for most women receiving any reproductive health care. Nurses in Portland can help facilitate the transition from receiving abnormal Pap smear result to pursuing follow-up care by offering counseling, guidance, and advice. In addition, the timing of the recommendation as well as specific instructions on how to pursue follow-up care should be a major focus of any communication between the provider and the patient. Our study demonstrates that such communication encourages the patient to seek appropriate care in the proper time frame. Such prompt action is essential in developing

countries since the time lapse between the initial Pap screening and the return of the results can be very long [4]. When the woman finally receives her results, she may be in a worse condition than at the initial screening time and may need treatment immediately.

Additionally, the healthcare centers can off-set the cost of services and ease the financial burden of seeking follow-up care. Women have to travel long distances to receive follow-up care. The health centers can arrange for specific days when the women can be seen at the public hospitals, such as the University Hospital in Kingston. If the centers can create an alliance with the University Hospital to have designated days to attend to the Portland patients for follow-up care, such travel arrangements will make it easier for women to adhere to a follow-up recommendation.

To our knowledge this study is first of its kind to examine the factors that improve adequacy of follow-up of an abnormal Pap smear among Jamaican women. Findings of our study add significant knowledge to cervical cancer prevention among Jamaican women; however, this study had some limitations. First, we utilized a convenience sample of all the women who were diagnosed in only one parish. Also, the sample was small, and this compromised the internal and external generalizability of our findings to all women in Jamaica. Information regarding follow-up was collected in retrospect; thus there is potential for recall bias. Due to self-reported data information bias cannot be ruled out. Although all efforts were made to verify the information collected from the interviews against the medical data for each woman, the medical records at the different locations were often incomplete. Such limitations need to be overcome in future research. Our interview responses called for both open-and close-ended responses. Multiple questions addressed the issues of our interest and we cross-tabulated the responses to resolve inconsistencies and to minimize reporting bias.

We have conducted this study in one discrete area of Jamaica; nevertheless, the results are insightful and suggest further inquiry into this matter. Future research, including a population-based study, would be helpful in further evaluating the results obtained from this study and in providing a clearer understanding of other factors that promote adequate adherence to follow-up care. Furthermore, in-depth investigation can help the public health centers in Jamaica find more efficient and effective ways in preventing morbidity and mortality from cervical cancer.

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Table 1

Demographic characteristics of women in the parish of Portland, Jamaica who had an abnormal Pap result during Jun 1998 to Sept 2005, stratified by follow-up action (N=121)

	All women (N=121)	Inadequate Follow-up (n=53, 43.80%)	Adequate Follow-up (n=62, 51.23%)	p-value
Age (mean, SD)	36.89, 3.20	38.43, 11.83	35.61, 7.72	0.128
Number of surviving children (mean, SD)	3.20, 1.81	3.64, 1.91	2.89, 1.67	0.026
Marital status (n, %)				
Never married	48, 39.66%	25, 47.16%	21, 33.87%	
Ever married	73, 60.33%	28, 52.83%	41, 66.12%	0.147
Monthly household income (J\$) (mean, SD)	9927, 10328	7852, 6891	11947, 12561	0.046
Employment status (n, %)				
Unemployed	32, 26.44%	17, 32.07%	14, 22.58%	
Employed	88, 72.72%	35, 66.03%	48, 77.41%	0.227
Education (n, %)				
Primary	20, 16.52%	10, 18.86%	8, 12.90%	
Secondary	93, 76.85%	38, 71.69%	51, 82.25%	
Above secondary	7, 5.78%	4, 7.54%	3, 4.83%	0.497

Data were missing for 6 (4.95%) for follow-up action, 10 (8.26%) for monthly household income, and one woman each (0.82%) for employment status and education.

Abbreviation: SD: Standard Deviation

Table 2

Reported factors for lack of follow-up by women in the parish of Portland, Jamaica who had an abnormal Pap result during Jun 1998 to Sept 2005, stratified by follow-up action (N=121)

	All women (N=121)	Inadequate Follow-up (n=53, 43.80%)	Adequate Follow-up (n=62, 51.23%)	p-value
Registration fee (n, %)				
Yes	97, 80.16%	43, 81.13%	51, 82.25%	0.897
No	22, 18.18%	9, 16.98%	10, 16.12%	
Perceived cost of services (n, %)				
Expensive	79, 65.28%	30, 56.60%	48, 77.41%	0.017
Not expensive	42, 34.71%	23, 43.39%	14, 22.58%	
Inconvenience (n, %)				
Yes	30, 24.79%	17, 32.07%	13, 20.96%	0.176
No	91, 75.20%	36, 67.92%	49, 79.03%	
Fear of adverse outcome (n, %)				
Yes	20, 16.52%	10, 18.86%	9, 14.51%	0.531
No	101, 83.47%	43, 81.13%	53, 85.48%	

Data were missing for 6 (4.95%) women for follow-up action and 2 (1.65%) women for registration fee.

Table 3

Assistance for follow-up received by women in the parish of Portland, Jamaica who had an abnormal Pap result during Jun 1998 to Sept 2005, stratified by follow-up action (N=121)

	All women (N=121)	Inadequate Follow-up (n=53, 43.80%)	Adequate Follow-up (n=62, 51.23%)	p-value
Provider of follow-up advice (n, %)				
Doctor	14, 11.57%	7, 13.20%	6, 9.67%	0.502
Nurse	103, 85.12%	44, 83.01%	56, 90.32%	
Explained results (n, %)				
Yes	90, 74.38%	36, 67.92%	52, 83.87%	0.128
No	26, 21.48%	14, 26.41%	10, 16.12%	
Advised timing of follow- up action (n, %)				
Yes	103, 85.12%	42, 79.24%	59, 95.16%	0.016
No	14, 11.57%	10, 18.86%	3, 4.83%	
Advised next step (n, %)				
Yes	109, 90.08%	46, 86.79%	61, 98.38%	0.028
No	8, 6.61%	6, 11.32%	1, 1.61%	
Answered questions (n, %)				
Yes	45, 37.19%	19, 35.84%	26, 41.93%	0.557
No	72, 59.50%	33, 62.26%	36, 58.06%	
Discussed the logistics of follow-up action (n, %)				
Yes	46, 38.01%	21, 39.62%	25, 40.32%	0.995
No	71, 58.67%	31, 58.49%	37, 59.67%	
Discussed potential barriers to follow-up action (n, %)				
Yes	20, 16.52%	13, 24.52%	7, 11.29%	0.060
No	96, 79.33%	39, 73.58%	54, 87.09%	

Data were missing for 6 (4.95%) women for follow-up action, 4 (3.30%) women each for provider of follow-up advice, advised timing of follow-up action, answered questions, discussed the logistics of follow-up action, and 5 (4.13%) women each for advised next step and discussed potential barriers to follow-up action.

Table 4

Crude and adjusted odds ratios indicating adequacy of follow-up action among women in the parish of Portland, Jamaica who had an abnormal Pap result during Jun 1998 to Sept 2005 (N=121)

	ORc (95% CI)	p-value	ORa* (95% CI)	p-value
Advised timing of follow-up action				
No	1.00		1.00	
Yes	4.68 (1.21, 18.05)	0.025	5.99 (1.17, 30.66)	0.031
Advised next step				
No	1.00			
Yes	7.95 (0.92, 68.39)	0.059	8.34 (0.88, 78.94)	0.064

Data were missing for 6 (4.95%) women for follow-up action, 4 (3.30%) women for advised timing of follow-up action, and 5 (4.13%) women for advised next step.

Abbreviations: ORc: Crude Odds Ratio, ORa: Adjusted Odds Ratio, CI: Confidence Interval

* Covariates: Model was adjusted for; number of surviving children, monthly income, and perceived cost of services.