

## Original Research Article

# The odds that working women will accept cervical cancer screening and HPV vaccination

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### ABSTRACT

**Background:** Factors influencing acceptance of cervical cancer services are being investigated, and widely reported to be quite low. However, there is dearth of research investigation on the odds of women's acceptance of this gynaecological service. Objective of this study was to investigate the odds of unwilling to accept cervical cancer services.

**Methods:** The study was a questionnaire-based cross-sectional survey and fourth piece in a series of analysis. Details of data collection are as previously described. Odds ratio was determined using online calculator; and based on proportion of respondents who have accepted the cervical cancer service, willing to complete an incomplete process and encourage others to take up the procedure.

**Results:** The percentage of respondents who indicated no problem with HPV vaccination (55%) is higher than cervical screening (53%), but not statistically significantly different. On average, unwillingness to vaccinate later, complete their vaccinations or encourage their daughter are one-third of those who vaccinated. Those unwilling to take up cervical screening, encourage others to screen or overcome their fears are more than (161%) the subgroup who have been screened. Results show odds of unwillingness for both procedures are less than 1, but a little greater for cervical screening.

**Conclusions:** It has been articulated that the likelihood to take up cervical cancer services will be influenced by the beliefs. This report advances that observed low acceptance level does not translate to high likelihood of unwillingness to accept the gynaecological services. Belief and nature of work of women need to be concertedly investigated.

**Keywords:** Cervical screening services, Odds ratio, Unwillingness to accept

### INTRODUCTION

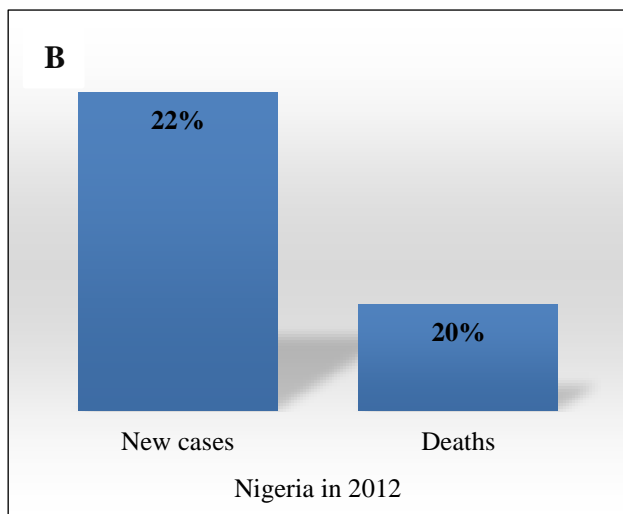
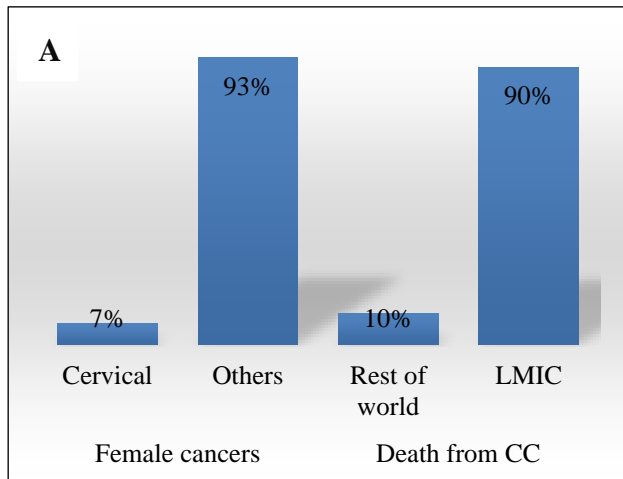
Literature has shown that cervical cancer still remains a public health issue globally. Evidence is mounting that the future burden of cervical cancer in sub Saharan will continue to be on the rise.<sup>1-3</sup> Several studies have looked into the knowledge, attitude and practice (KAP) regarding cervical cancer services; and noted the fact that even healthcare professional are not accepting the

service.<sup>4-8</sup> Also, several studies have echoed pertinent factors influencing acceptance of the gynaecological service have been implicated.<sup>7,9-11</sup> In particular, ignorance as well as educational status, living in rural area, socio-economic level and unemployment have been noted.<sup>2,5,9</sup>

Over the years, low-mid income countries (LMIC) has been recognized as bearing the largest burden and Nigeria is not an exception (Figure 1). Hence, cervical cancer

screening and HPV vaccination has remained one of the research focus of interest in Nigeria, especially as acceptance has remained low.<sup>4-8</sup> Even among nurses who presumably have highest level of awareness, more than 94% of a cross-sectional survey had never undergone screening and over one-third couldn't give any reason for not screening.<sup>6</sup>

Hence, there is need to investigate the odds of unwillingness to accept HPV vaccination and cervical cancer screening.



**Figure 1: Indications of cervical cancer globally and in Nigeria, A) Cancer burden. B). Cervical cancer reports.<sup>3; 12</sup>**

The broad objective of this study is evaluation of willingness to accept cervical screening and HPV vaccination among female civil servants in Delta State. The specific objectives are to assess the odds that working class women are willing to take up the procedures (cervical screening and HPV vaccination) and complete an incomplete dosage or process of procedures and encourage others to accept the procedures.

## METHODS

This was a last of four pieces of work in the series of... As described in the first three parts of this series, this study was designed to be a cross sectional, descriptive survey. The study setting was the Delta State Secretariat Clinic located in Asaba, the State capital (Approval Reference: HD 92/A/28 Ministry of Health). Four hundred and fifteen (415) Questionnaires were distributed, out of which 285 were satisfactorily completed and included for analysis. Consent and voluntarism were assumed on return of the completely filled forms. Therefore, others did not submit, were incompletely filled, or were returned unfilled.

Quantitative questionnaire survey was used to collect data on eight demographic factors including age, educational level, ethnicity, income level, and marital status, amongst others. Other sections of the structured questionnaire elicited information for evaluation of factors influencing acceptance of cervical cancer screening and HPV vaccination. For this particular study; the dichotomous 'yes' or 'no' responses on factors influencing acceptance of the procedures were analyzed to determine odds of willingness.

### Statistics analysis

To estimate the odds ratio (OR) of 'willingness to accept' by taking cognizance of the proportion of the population who has accepted procedure; Odds ratios of willingness were derived using the online calculator,<sup>13</sup> which based on the formula

$$\text{Odds ratio} = (A/B) \div (C/D)$$

Where, [A] and [B] respectively represents number of those who unwilling and willing to vaccinate later, complete their vaccinations or encourage their daughter; while [C] and [D] are those who have not been, and have accepted procedure, respectively.

## RESULTS

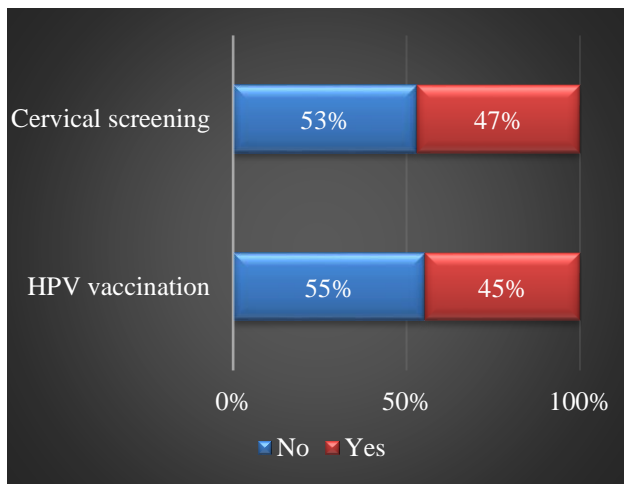
Comparative descriptive statistics of response to factors that could influence acceptance show no statistical difference between cervical cancer screening and HPV vaccination (Table 1).

When critically reviewed in terms of averaged proportion of participant who responded whether on overall 'the factors influenced not going for the procedures i.e. cervical screening and/or HPV vaccination'; the results show that percentage of respondents who indicated 'yes' to the factors as mitigation to their acceptance is lower for HPV vaccination (45%) than cervical screening (47%), but not statistically significantly different (Figure 2).

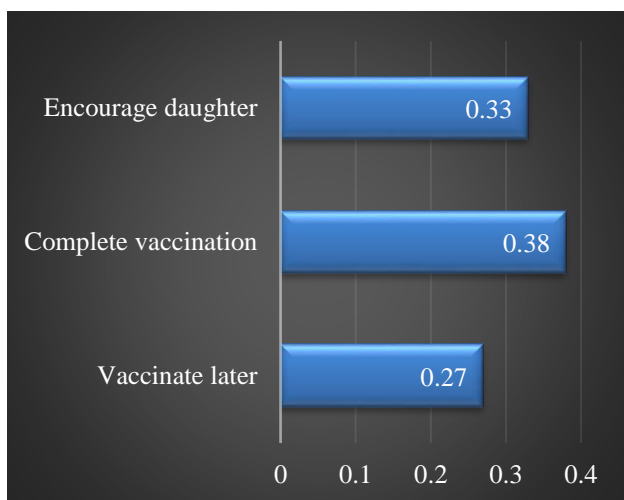
**Table 1: Comparative\* descriptive statistics of responses on factors influencing acceptance.**

| Factors                             | Yes |     | Yes % |      | No  |     | No % |      | 'R Hz' for Yes |      | 'R Hz' for No |      |
|-------------------------------------|-----|-----|-------|------|-----|-----|------|------|----------------|------|---------------|------|
|                                     | HPV | CCS | HPV   | CCS  | HPV | CCS | HPV  | CCS  | HPV            | CCS  | HPV           | CCS  |
| Unaffordable cost                   | 262 | 262 | 91.9  | 91.9 | 23  | 23  | 8.1  | 8.1  | 15.9           | 15   | 1.1           | 1.2  |
| Fear and discomfort of procedure    | 238 | 257 | 83.5  | 90.2 | 47  | 28  | 16.5 | 9.8  | 14.4           | 14.8 | 2.3           | 1.4  |
| Fear of adverse effect              | 193 | 239 | 67.7  | 83.9 | 92  | 46  | 32.3 | 16.1 | 11.7           | 13.7 | 4.5           | 2.3  |
| Inaccessibility to sites            | 230 | 191 | 80.7  | 67   | 55  | 94  | 19.3 | 33   | 13.9           | 11   | 2.7           | 4.8  |
| Confidentiality and privacy concern | 125 | 168 | 43.9  | 58.9 | 160 | 117 | 56.1 | 41.1 | 7.6            | 9.6  | 7.8           | 6    |
| Lack of support from spouse         | 107 | 37  | 37.5  | 13   | 178 | 248 | 62.5 | 87   | 6.5            | 2.1  | 8.6           | 12.6 |
| Discouraged by colleagues           | 13  | 9   | 4.6   | 3.2  | 272 | 276 | 95.4 | 96.8 | 0.8            | 0.5  | 13.2          | 14.1 |
| Community taboo culture             | 2   | 73  | 0.7   | 25.6 | 283 | 212 | 99.3 | 74.4 | 0.1            | 4.2  | 13.8          | 10.8 |
| Nature or schedule of work          | 283 | 285 | 99.3  | 100  | 2   | 0   | 0.7  | 0    | 17.1           | 16.4 | 0.1           | 0    |
| Attitude of health workers          | 172 | 144 | 60.4  | 50.5 | 113 | 141 | 39.6 | 49.5 | 10.4           | 8.3  | 5.5           | 7.2  |
| Person disbelief about procedures   | 20  | 38  | 7     | 13.3 | 265 | 247 | 93   | 86.7 | 1.2            | 2.2  | 12.9          | 12.6 |
| Fear of being stigmatized           | 6   | 39  | 2.1   | 13.7 | 279 | 246 | 97.9 | 86.3 | 0.4            | 2.2  | 13.6          | 12.5 |
| Religion forbids                    | 0   | 0   | 0     | 0    | 285 | 285 | 100  | 100  | 0              | 0    | 13.9          | 14.5 |

CCS: cervical cancer screening; HPV: HPV vaccination; 'R Hz': relative frequency, \*Responses on cervical screening versus HPV vaccination are not significantly different ( $p > 0.05$ )



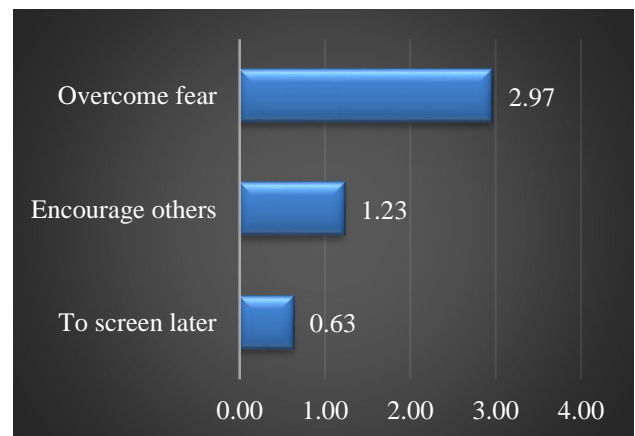
**Figure 2: Comparative averaged percentage of 'yes' or 'no' respondents on factors as problems.**



**Figure 3: Ratios of unwillingness to those who vaccinated.**

It appears that the subgroup who are unwilling to vaccinate later, complete their vaccinations or encourage their daughter are on average 32% of those who vaccinated (Figure 3). Results show very low OR of willingness in all three evaluations-to vaccinate later (OR = 0.0015,  $p < 0.0001$ ), complete their vaccinations (OR = 0.0025,  $p < 0.0001$ ) and encourage their daughter (OR = 0.002,  $p < 0.0001$ ).

Reviewing the subpopulations of those who have cervical screening relative to those yet to be screened, results show that the subgroup who are unwilling to take up cervical screening, agreed to screen later, and/or encourage others to screen or overcome their fears of side-effects increase with age. On average 161% of (i.e. greater than) the subgroup who have been screened (Figure 4).



**Figure 4: Ratios of unwillingness to those who had cervical screening.**

Results show very low OR of willingness in all three evaluations to take up cervical screening later

(OR=0.0093 P<0.0001) encourage others to take up screening (OR=0.0018 P<0.0001) and overcome fear of side-effects or age (OR = 0.27, p<0.0001).

## DISCUSSION

It is still speculated that being employed, high income earner and married are associated with, or constitute positive influence for acceptance of cervical services.<sup>14,15</sup> However, the background literature indicate dearth of research investigation on the odds of women's acceptance of both cervical cancer screening and HPV vaccination. Thus, there may be erroneous assumption that affordability is a reason for accepting any of these services. Therefore, there is need for research to address that gap in knowledge by investigating the odds of acceptance based on those who (1) have accepted and (2) willing to accept or encourage others.

Analysis of responses to questions on factors influencing acceptance of the cervical services indicate that at one extreme, all respondents (N = 285) agree on religion as not forbidding them from taking the screening or vaccination. On the other extreme of the continuum, nature of work appears to influence virtually all of the respondents, while discouragement, fear of stigma and community taboo constitute the top three influential factors (Table 1).

The averaged proportion of respondents who responded to whether 'the factors influenced not going for the procedures i.e. cervical screening and/or HPV vaccination' (Figure 2); show that percentage of respondents who indicated 'yes' to the factors as mitigation to their acceptance is higher for cervical screening (47%) compared to HPV vaccination (45). This also translates to more people having no problem with HPV vaccination (55%) than cervical screening (53%). Although statistical significant difference is not observed, it can be inferred that a higher proportion seems to have problem with cervical screening, and it has been reported that knowledge about (and by implication, acceptance of) cervical cancer in Africa is lower than acceptability of HPV vaccines.<sup>16</sup> It has also been suggested that statements of evidence supporting effectiveness of cervical services could improve perceptions, especially as beliefs threaten existing programs; hence the need for context-specific evidence-based strategies advocated.<sup>16-18</sup> What this report contributes is an empirical data from Delta State, Nigeria. The implication is in the need to advance the knowledge of cervical screening procedure. Therefore, it is thinkable i.e. worth considering the hypothesis that the odds of accepting HPV vaccination may improve if the factors mitigating acceptance of cervical cancer screening is addressed.

The number and percentage of participants indicating willingness to vaccinate later, complete their vaccination or encourage their daughter may be misleading if viewed literarily in ratios. A further evaluation for odds ratio was

performed. This takes cognizance of the fact that only 7.4% of the population has accept HPV vaccination, whereas average of about a third of the respondents are *unwilling* to vaccinate later, complete their vaccinations or encourage their daughters to vaccinate (Figure 3). The observed ratios different for cervical screening with those who screened being of lower proportion (Figure 4), which could mean that the unwillingness to accept this procedure is far greater than accepting HPV vaccination.

Considering the 'Yes' responses to be negative in terms of 'unwillingness to accept'; results show the odds ratios for both procedures are less than 1, though a little higher for cervical cancer. That is, the likelihood of unwillingness for cervical cancer screening is relatively greater than for HPV vaccination. A report based on systematic review and meta-analysis has indicated that willingness to vaccinate is significantly higher-reaching up to 'OR = 1.57' among women who are unaware.<sup>19</sup> In this study, participants are mainly urban women with about 95% of them possessing National Diploma qualifications or higher. Therefore, it can be inferred that a high level of education does not translate into positive influence on willingness to accept the cervical cancer services. Support for this inference can be gleaned from the review report, which showed that cervical screening rate among female medical practitioners was about 1.8% whereas rural women were up to 3.9%.<sup>3</sup>

### **Public health education significance: two points of note**

**Health economics:** The need for cost-effectiveness in public health services can never be overlooked, especially by the policy makers.<sup>20</sup> It may interest to note that there could economic returns from HPV vaccination. A systematic review study from Hong Kong reported HPV vaccination was considered to be cost-effective or cost-saving,<sup>21</sup> though another systematic review highlighted that variations in the service strategies have implications on cost-effectiveness.<sup>22</sup>

It is advised that "knowledge of the burden of disease, safety and effectiveness of HPV vaccine is not enough" to vaccinate, but the potential benefit in reducing cervical cancer. This is given the knowledge that vaccination does not eliminate the risk of cervical cancer.<sup>23</sup> What this paper advances is that the likelihood of unwillingness to accept is reasonably low. Therefore, necessary strategies to tap the economic benefits should be harnessed-e.g. improving knowledge and attitude.

**Knowledge and attitude:** The ignorance of the benefit of cervical cancer screening and HPV vaccination has yet to be disputed, but belief is yet another strong determinant to focus on.<sup>3</sup> It is pertinent to differentiate this ignorance i.e. low level of knowledge from belief, because knowledge underpins the capacity to accept, the latter is about attitude or willingness-able and willing per se.<sup>24,25</sup> In the context of this discourse, it has been articulated that perceived benefits of the cervical cancer services are

dependent on the belief in positive attributes of the services, especially as perception of susceptibility or severity may exist, but the likelihood to take up the health service will be influenced by the beliefs.<sup>3</sup> Even at the public health policy making level, the concept of belief is captured in the suggestion that “Governments need convincing evidence that HPV vaccination will be more cost-effective in reducing the scourge of cervical cancer”.<sup>20</sup> Therefore, ‘belief’ is still an issue to address even in the public health ministry.

Of course, there is the confounding knowledge that HPV vaccine merely reduces, but not necessarily remove the cervical cancer risk.<sup>23</sup> It is pertinent to note the results indicate a situation where more people appear to be accepting HPV vaccination compared to cervical screening. The odds ratio or likelihood of unwillingness also seems higher for cervical cancer screening than HPV vaccination. It is thinkable and hereby hypothesized that belief in cervical screening may be a determinant that could even improve acceptance of HPV vaccination. However, it also possible that truth about the limited effect of HPV vaccination is a factor to integrate into public health messages and expectations.

## CONCLUSION

This study has investigated the odds that women, who are gainfully employed as civil servants in the State’s capital city, will accept cervical cancer services. The odds ratio were determined based on respondents’ indication of acceptance and other actions on screening and HPV vaccination. The result show the odds for both cervical screening and HPV vaccination are less than 1. Although statistical significance was not achieved, the percentage of respondents who have accepted cervical cancer service is less and odds of unwillingness is higher for screening relative to HPV vaccination.

More importantly, the very low odds of unwillingness indicate that the acceptance level of cervical cancer services being abysmal do not translate to unwillingness. It is hereby suggested that belief in cervical screening as a determinant acceptance of this special women’s health service should be given a concerted consideration, especially factoring the nature of work, which all respondents in this study unanimously indicated to be an influence.

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