Impact of New Collecting Instruments on Satisfactory Cervical Cytology in a Diagnostic Reference Center at Mexico City

Sir,

In low- and middle-income countries, uterine cervical cancer is still a main cause of morbidity and mortality.[1] Cervical cancer has identifiable preinvasive lesions;[2] thus, its detection through screening studies (cervical cytology, etc.) is feasible;[3] in Mexico, the cervical cytology is widely accepted.[3] In the Instituto de Seguridad y Servicios Sociales para los Trabajadores del Estado (ISSSTE: State’s Employees’ Social Security and Social Services Institute), 49.4% of the workers and 46.8% of the pensioners have had a cervical cytology.[4] Therefore, every physician and nurse should be properly trained to do it.

The cervical cytology needs to have mainly cells from the squamocolumnar junction, as cervical cancer invariably occurs in this site.[2] The acceptable rate of inadequate cytologies is 10%–15%.[2] However, its exactness increases by ensuring proper sampling of the squamocolumnar junction. Thus, the cytologies without endocervical or metaplasia cells (cells of the squamocolumnar junction) are unsatisfactory.[2]

In 2005, we detected that in patients with ISSSTE-insurance, the rate of satisfactory cervical cytology (with endocervical and/or metaplasia cells) was <50%.[5] Considering that ISSSTE medical units have acquired modern collecting instruments for cervical cytology, and the time trend on the acceptable cytologies in our institution has not been evaluated, we did this study. The study’s aim was to find out the influence of new collecting instruments on the rate of satisfactory cervical cytology.

The pathology service of the Hospital General Tacuba is a reference center for the diagnosis of cervical cytologies generated in the ISSSTE units in the western part of Mexico City; the cervical cytology reports analyzed were safeguarded in that service. It was an investigation on the studies carried out from the years 2005, 2013, and 2017; the past 2 years were randomly selected and compared with 2005. From those 3 years, 30% of all studies were randomly selected. The study was approved by the institutional research and ethical committees (# 659.2018).

The cervical cytologies were taken in an opportunistic way, from insured (ISSSTE workers, pensioners, or beneficiaries) and in non-insured patients (this because this is a priority service in Mexico), that approached to four family medicine clinics or to the gynecology service of the Hospital General Tacuba. In that units, the patient’s identification, demographic data, hysterectomy history, regularity of taking the cytology (first time, ≤1 year, 2–3 years, and >3 years), and instrument for collection (wooden Ayre spatula, endocervical brush, spatula + endocervical brush, wooden tongue depressor, endocervical brush + tongue depressor, Cervex-Brush, and Cervex-Brush + endocervical brush) were documented.

The cytology and their report were received in the pathology service, registered, processed, and diagnosed by cytotechnologists. In addition, 10% of the slides were randomly reassessed by personnel certified in pathology to verify diagnosis and sample’s adequacy. In the slides, the observed cells (endocervical, metaplasia, or absence of them) were reported. The studies were defined as satisfactory in the presence of endocervical and/or metaplasia cells. Reports with illegible, incomplete data or with total hysterectomy history were excluded.

The difference between the satisfactory cytology rates of the three periods investigated was evaluated. Data were analyzed with Pearson’s “χ²”; for all analyses, the statistic program OpenEpi version 3 (Dean AG, Sullivan KM, Soe MM. OpenEpi: Open Source Epidemiologic Statistics for Public Health, USA, www.openepi.com) was used. All \( P < 0.05 \) were considered statistically significant.

The study involved 4594 reports: 1331 of 2005, 1568 of 2013, and 1695 of 2017 [Table 1]. The satisfactory studies were in 2005, 48.8% (650/1331), in 2013, 32.7% (513/1568), and in 2017, 35.8% (607/1695). The difference between 2005 and 2013 was significant \( (P < 0.0000001; \text{ odds ratio } [OR]: 0.5, \)

Table 1: Characteristics of the sample studied

| Variable                        | Year 2005 (n=1331) | Year 2013 (n=1568) | Year 2017 (n=1695) |
|---------------------------------|--------------------|--------------------|--------------------|
| Mean age (years) (range)        | 44.9±12.7 (16-88)  | 48.2±12.9 (15-103) | 49.5±13.4 (15-93)  |
| Main instruments used (%)       | Cervical brush/wooden Ayre’s spatula (77) | Endocervical brush/ Cervex-Brush (90.8) | Endocervical brush/ Cervex-Brush (95.5) |
| Main users (%)                  | Active workers (58.4) | Active workers (55.6) | Active workers (63.1) |
| Pap smear done in ≤1 year (%)   | 47.2               | 46.2               | 48.7               |
| Premalignant and malignant lesion (%) | 3                  | 0.3                | 2.5                |
| Satisfactory pap smears (%)     | 48.8               | 32.7               | 35.8               |

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95% confidence interval [CI]: 0.43–0.59). Moreover, for 2005 and 2017, it was significant (\(P < 0.0000001\); OR: 0.58, CI 95%; 0.50–0.67).

This study found that the rate of satisfactory cervical cytology has decreased, even using modern and expensive collecting devices; our findings are different from other studies in Latin America. Unsatisfactory cervical cytology has huge diagnostic and financial implications for health systems. Since modern screening technologies for diagnosing cervix preinvasive lesions are expensive, the usual screening is opportunistic, and since in Mexico, there are economic constraints on health sector, as in many low- and middle-income countries, it is suitable to reinforce the quality of cervical cytology with appropriate training for the use of new collection instruments, and not just increase their number.

Like any other study, this has limitations. It was a retrospective study from an urban population, and we cannot identify whether the kind of health personnel influences the rate of satisfactory cervical cytology. Thus, these are innovative research opportunities.

Concluding, the use of new collecting instruments has decreased the rate of satisfactory cervical cytologies.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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Quick Response Code:
Website: www.ijcm.org.in
DOI: 10.4103/ijcm.IJCM_397_20

How to cite this article: Ortiz-Mendoza CM. Impact of new collecting instruments on satisfactory cervical cytology in a diagnostic reference center at Mexico city. Indian J Community Med 2021;46:340-1. Received: 25-05-20, Accepted: 25-11-20, Published: 29-05-21 © 2021 Indian Journal of Community Medicine; Published by Wolters Kluwer - Medknow