

Original Research Article

Colposcopic evaluation of cervical lesions with swede score and its correlation with histopathology

ABSTRACT

BACKGROUND & OBJECTIVES

Cervical cancer is the second most frequent cancer in India, with an estimated yearly diagnosis of 1, 23,907 women and 77,348 fatalities. The prevalence of cervical cancer remains high in poorer nations owing to budget constraints and a lack of access to healthcare. By evaluating cervical lesions colposcopically, this study sought to determine the validity of the Swede score.

METHODS

The cross-sectional analytical study lasted two years, from July 2019 to July 2021, at Krishna Institute of Medical Sciences, Karad. 162 women who met the selection criteria underwent colposcopy after informed consent. The suspicious site was biopsied and submitted for histopathology. The Swede score was subsequently validated using histopathology.

RESULTS

With a Swede score of 5 as the cut-off, 108 (97.30 %) of 111 patients with a score of <5 had a normal or low-grade lesion, while just 3 (2.70 %) had high grade lesion. 51 patients with a score greater than 5, 15 (12.20%) had a low-grade lesion and 36 (92.30%) had high-grade lesion.

Using the Swede score of 8 as a cut-off, 123 (87.90%) of 140 patients had a normal or low-grade lesion, whereas 17 (12.1%) had a high-grade lesion. There were high grade lesions in all 22 patients with score of >8.

INTERPRETATION & CONCLUSIONS

The test group at Swede score cut-off 5 exhibited a sensitivity of 92.31 % and a specificity of 87.80 % to the gold standard of histopathology. Comparing the test group's Swede score at cut-off 8 to histopathology yielded a sensitivity of 56.41% and specificity of 100%.

KEYWORDS

CA Cervix, CIN, Colposcopy, Screening, Swede score

INTRODUCTION

Cervical cancer is a global problem. There are 483.5 million women in India aged 15 and above who are at risk of having cervical cancer. According to current statistics, 1, 23,907 women are diagnosed with cervical cancer each year, with 77,348 dying from the disease. Cervical cancer is the second most common disease among Indian women and the second most common cancer among women aged 15 to 44. HPV-16/18 infection is predicted to affect 5% of women in the general population at any given time and HPVs 16 and 18 are responsible for 83.2 percent of invasive cervical malignancies⁽¹⁾. Due to fiscal restrictions and a lack of access to healthcare, the prevalence of cervical cancer remains high in developing countries⁽²⁾. Cervical cancer has a long latent period, thus Pap smears, HPV testing, acetic acid cervical inspections and Lugol's iodine are all good screening options⁽³⁾. Because cytology-based screening programmes are laboratory-based, need expensive equipment with specialist support and require competent people to generate and analyse the slides, they have proved challenging to implement in low-resource settings⁽⁴⁾. A colposcopy-guided biopsy of suspicious areas is the gold standard for identifying intraepithelial lesions⁽⁵⁾. Accuracy, which is directly proportionate to the operator's expertise, is the limiting factor. Reid and Scalzi devised the Reid Colposcopic Index (RCI) to assess the severity of premalignant lesions and make colposcopy diagnosis less subjective. The acetowhiteness colour, borders, vascular pattern, and iodine staining are all included⁽⁶⁾. Strander et al. created the Swede score, which includes lesion size as a variable in addition to the four colposcopic symptoms previously described, as well as adjustments to the score definitions for the remaining components. The Swede score is easy to use and requires minimal training; any level of colposcopist may use it. According to their findings, a total score of 8 or above showed 90% specificity, and no CIN 2 or higher lesion resulted in a score lower than 5⁽⁷⁾.

MATERIAL & METHODS

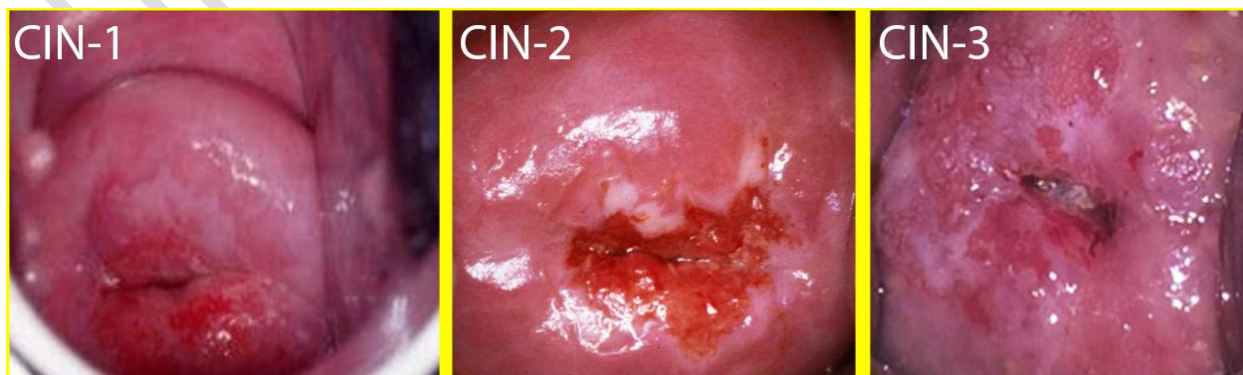
This prospective cross-sectional analytical study took place at Krishna Institute of Medical Sciences in Karad for two years, from July 2019 to July 2021. The Institute's ethical committee gave its approval to the study plan. The study was performed by a single

researcher. The research includes 162 patients out of the initial 200 patients investigated. Suspected cervical abnormalities, unhealthy appearing cervix, recurrent vaginal discharge or post-coital bleeding were considered as inclusion criteria in the research after obtaining informed and signed consent. Patients with evident cervical cancer, past cervix procedures such as excision biopsy, cryotherapy, and conization, pregnant women, menstrual women, severe debilitating illness and unsatisfactory colposcopy were all excluded from the research.

The patient's medical history was recorded in detail, and she underwent a thorough general, physical, and pelvic examination. The woman was positioned in the dorsal position, with her buttocks just over the examination table's end.

First, the cervix was examined with the naked eye for any evident signs such as ectropion, polyp, nabothian follicles, atrophy, inflammation, and infection, leukoplakia (hyperkeratosis), condylomata, ulcer, growth, or any visible lesions in the vaginal fornices. Any unusual discharge was recorded.

Excess mucus was then carefully removed from the cervix using saline-soaked cotton swabs. The term "adequate colposcopy" was defined as seeing all four quadrants of the cervix. The transformation zone's distal and proximal bounds have been established. Following that, the cervix was seen at magnification of 5x to 16x and the findings were recorded. The vascularity of the lesion was assessed using a green filter. To increase visibility of the aberrant spots, 5% freshly made acetic acid was added to the surface, followed by Lugol's iodine. The atypical cervical epithelium's margins were rated based on a variety of factors, including aceto-uptake, margin/surface, vessels/vascularity, lesion size, and iodine staining.



A punch biopsy of the cervix was obtained and submitted for histological investigation. All of the findings were scored using the Swede score.

Swede Score	0	1	2
Aceto-uptake	Nil or transparent	Shady, milky	Distinct, opaque white
Margins/ Surface	Diffuse	Sharp but irregular, jagged, geographical satellites.	Sharp and even, difference in surface level including cuffing
Vessels	Fine, regular	Absent	Coarse or atypical
Lesion Size	<5mm	5-15mm or 2 quadrants	>15mm or 3-4 quadrants or endocervically undefined.
Iodine Staining	Brown	Faintly or patchy	Distinct yellow

The Swede score was recorded, and the biopsy location was indicated. The biopsy information was entered. The patients were classified during colposcopy based on the scores. In the Swede score, a score of 5 indicated high grade lesions and an 8 indicated CA Cervix. They were eventually classified as Normal, CIN I, CIN II, CIN III, and SCC after histological analysis. The accuracy of Swede score and histopathology reports were compared, and colposcopic results were compared to histological findings.

Chi-square/ Fisher Exact test was used to find the significance of study parameters on categorical scale between two groups. Sensitivity, Specificity, Positive Predictive Value and Negative predictive value were calculated for Swede score taking histopathology as gold standard.

RESULTS

The purpose of this study was to determine the validity of the SWEDE score based on colposcopic assessment of cervical lesions and its connection with histopathology in 162 women. 47 (29.0 percent) of the 162 patients were between the ages of 45 and 50, while 36 (22.2 percent) were between the ages of 31 and 40. The average age of the participants in the research was 45.8 years. 68 (41.98%) patients were determined to have parity of two, 50 (30.86%) third parity and 38 (23.46%) having parity of more than three. Only 1.23 percent of the patients had no parity. Of the 162 patients, 105 (64.81 percent) were from the lower socioeconomic class, followed by 36 (22.23 percent) from the middle socioeconomic class. The biggest number of patients, 67 (41.4%), were discovered in the reproductive age group, followed by peri-menopausal 48 (29.6%) and post-menopausal 47 (29.0%) in the total 162 patients. The most prevalent clinical presentation in this study was discharge per vaginam, which accounted for 63 (39.18 percent) of the 162 patients, followed by abnormal uterine haemorrhage (29.72 percent). Other symptoms included postmenopausal bleeding (23.18 percent) and post-coital bleeding (5%). (3.08 percent). A total of 14.18 percent of the patients had no symptoms.

Table 1: Colposcopic Interpretation Using Swede Score

Swede Score	Low Grade Lesion (LGL)		High Grade Lesion (HGL)		Total
	Cases	%	Cases	%	
0-2	61	98.38%	1	1.61%	100.0%
3-4	47	95.91%	2	4.081%	100.0%
5-7	15	51.72%	14	48.27%	100.0%
>8	0	0.0%	22	100.0%	100.0%

In the study group, Table 1 displays colposcopic interpretation using the Swede score. Among 62 patients with a score of 0-2, 61 (98.30 percent) had LGL, whereas just one patient had HGL.

Similar patterns were seen in Swede score of 3-4. LGL was found in 15 (51.72 percent) of the cases with a Swede score of 5-7, whereas HGL was found in 14 (48.27 percent) of the patients with a Swede score of 5-7. Surprisingly, no cases of LGL with a score of >8 were found. HGL was present in every case.

Table 2: Correlation between Swede Score and Histopathology

Swede Score	Histopathological Diagnosis											
	Normal		CIN-I		CIN-II		CIN-III		SCC		Total	
	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%
0-2	56	90.3	5	8.0	1	1.6	0	0.0	0	0.0	62	100.0
3-4	32	65.3	15	30.6	1	2.0	1	2.0	0	0.0	49	100.0
5-7	5	17.24	10	34.48	5	17.24	7	24.1	2	6.89	29	100.0
>8	0	0.0	0	0.0	0	0.0	14	63.6	8	36.4	22	100.0
Total	-	-	-	-	-	-	-	-	-	-	162	100.0

The study showed that out of 62 patients with SWEDE score 0-2, 56 had normal biopsy finding, 5 patients had CIN-I and only 1 patient had CIN II. Out of 49 patients who had score 3-4, 32 had normal biopsy findings, 15 patients had CIN-I, 1 patient had CIN-II and 1 patient had CIN-III. Out of 29 patients who had score 5-7, 5 had normal biopsy findings, 10 patients had CIN-I, 5 patients had CIN-II, 7 patients had CIN-III and 2 patients had SCC. Out of 22 patients who had score more than 8, 14 patients had CIN-III and 8 patients had SCC.

Table 3: Comparison Between Swede Score and Histopathology: At Cut off Scores of 5 & 8

Parameter	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value	Diagnostic Accuracy	Kappa statistics	P Value
Score ≥ 5	92.31%	87.80%	70.59%	97.30%	88.89%	0.7249	<0.001
Score ≥ 8	56.41%	100%	100%	87.86%	89.51%	0.6627	<0.001

At cut off score of 5, on comparison of the test group with the gold standard of histopathology, colposcopy had a sensitivity of 92.31% and specificity of 87.80%. The test had a Positive predictive value of 70.59% and Negative predictive value of 97.30%. Colposcopy had a diagnostic accuracy of 88.89% with histopathology. Similarly, at cut off score of 8, on comparison of the test with the gold standard of histopathology, the test had a sensitivity of 56.41% and specificity of 100%. The test had a Positive predictive value of 100% and Negative predictive value of 87.86%. Colposcopy had a diagnostic accuracy of 89.51%.

DISCUSSION

Cervical screening's major purpose is to detect women with high grade CIN, which are regarded as genuine precursors to invasive cancer requiring treatment thereby reducing cervical cancer morbidity and death. Strander et al. developed a new scoring system, the Swede score, which is easy to use, with no steep learning curve, and it's suitable for any level of colposcopist. It supplements RCI with lesion size as an additional parameter. Using this grading system can help guide colposcopic interpretation so that higher-grade lesions aren't overlooked and minor findings aren't over-explained.

In this study, various patient characteristics were analyzed. Out of total 162 patients 47 (29.0%) were found in the age group of 45 to 50 years followed by 36 (22.2%) in 31 to 40 years. The mean age of the study population was 45.8 years. Durdi et al and Kohli et al found the mean age of the female were 36 years and 39.9 years respectively ⁽⁸⁾⁽⁹⁾. The mean age in the study by Rodpenpear N et al was 40.14 years and in the study by Shojaei et al was 40.9 years, which is similar with the current study ⁽¹⁰⁾⁽¹¹⁾.

68 (41.98%) patients were determined to have parity of two, 50 (30.86%) third parity and 38 (23.46%) having parity of more than three. Only 1.23 percent of the patients had no parity. Nessa et al found the similar results with this study ⁽¹⁵⁾. They found that 41.4% of women had parity of

two followed by 19.6% having parity of three. Similar results were also observed in study by Patil et al and Kohli et al⁽⁹⁾⁽¹²⁾.

In this study, 105 (64.81%) were in the lower class followed by 36 (22.23%) patients were in middle class. Out of total 162 patients' highest number of patients 67 (41.4%) were found in the reproductive age followed by peri-menopausal 48 (29.6%) and post-menopausal 47 (29.0%) were found. 64.81% of people belonged to lower socio-economic class which was similar to the study done by Patil et al⁽¹²⁾.

In this study, the most common clinical presentation was discharge per vaginum 63 (39.18%) followed by abnormal uterine bleeding (29.72%). The other presentations were post-menopausal bleeding 23 (14.18%) and post coital bleeding 5 (3.08%). Around 14.18% of the patients were asymptomatic. Most of the patients presented with white discharge per vaginum (39.18%) which was comparable to study done by Kumari et al and Durdi et al⁽⁸⁾⁽¹³⁾.

In low grade lesion (LGL) group 61 (98.38%) patients had SWEDE score between 0 and 2 and 1 (1.61%) had High grade lesion (HGL). There were 22 (100%) cases found in HGL group when SWEDE score was more than 8 and none were found in LGL group. The research carried out by Ngonzi J et al' the Swede score was greater than 5 in all patients of CIN 2 to 3+, regardless of whether the Gynocular or the colposcope was used. Only one case of CIN 2 was found, with a Swede score of 7. CIN 3 was found in two instances, each with a Swede score of 5. There were two cases with CIN 3+, with Swede scores of 7 and 9 respectively⁽¹⁴⁾.

At cut off score >5, Swede score showed a sensitivity of 92.31% and specificity of 87.80% which was similar to the study done by Strander et al⁽⁷⁾. A p-value of 0.001 and Kappa score of 0.7249 indicated very good agreement. In the study done by Nessa A et al, the NPV was only 18.8%. However, the sensitivity and PPV were 66.7% and 87.6% respectively, which is comparable to the current study⁽¹⁵⁾. Ranga et al, found that the sensitivity, PPV and NPV were 100%, 76.74% and 100% respectively which is also comparable with the current study⁽¹⁶⁾. Specificity was very high in the current study compared to study done by Ranga et al⁽¹⁶⁾.

The sensitivity, specificity, PPV of Swede score at cut off scores >8 in this study correlated with the studies done by Bowring et al, Kärberg et al, Nessa A et al and Ranga et al^{(15) (16) (17) (18)}. This study showed a 100% specificity and PPV at cut-off >8. A p-value of 0.001 and Kappa value of 0.663 indicated very good agreement. Study by Bowring et al found the 95% specificity. The PPV was 83.0%, which is comparable with the present study⁽¹⁷⁾. In the study done by Nessa A et al, the PPV was only 87.2%, which is comparable to the present study. However, the sensitivity, specificity and NPV were 30.6%, 90.5% and 37.6% respectively⁽¹⁵⁾. Ranga et al found 100% Specificity and PPV. However, the sensitivity was only 42.42%. PPV and NPV value was 100% and 81.9% respectively, which is comparable with the present study⁽¹⁶⁾.

LIMITATIONS

The negative predictive values of trainee colposcopists are much larger, indicating that less experienced colposcopists will be more careful in their assessment, providing higher ratings than their more experienced counterparts.⁽⁷⁾ Although colposcopy accuracy is ascribed to operator skill, colposcopists may not be fully to blame for discrepancies between colposcopic impression and histopathologic diagnosis, as there is some inter-observer variability among pathologists when evaluating CIN histologically.⁽¹⁵⁾

CONCLUSION

Colposcopy has been shown to be an accurate method of identifying cervical lesions. When the Swede score was compared to histopathology, it was shown that scores rose in proportion to the degree of lesion. Correlation with histology was better for high grade lesions than for low grade lesions. This indicates that the Swede score is superior at diagnosing high-grade lesions. Scores more than 5 have a high sensitivity for screening, and scores greater than 8 have a high specificity for diagnosis. As a result, it is a more appealing choice for cancer prevention in settings with limited resources.

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UNDER PEER REVIEW