A CLINICAL AUDIT OF A NURSE COLPOSCOPIST. COLPOSCOPY: CYTOLOGY: HISTOLOGY CORRELATION

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Abstract

The role of the nurse colposcopist has been established in some countries for a number of years. At National Women's Health the first New Zealand nurse colposcopist training programme was developed in 2000. A clinical audit was undertaken to assess the diagnostic skills of the nurse colposcopist measuring colposcopy: histology: cytology correlation. A retrospective audit of the colposcopy clinical records was performed during the nurse's training programme between July 2000 and March 2002. An 82% (82/100) histology: cytology: colposcopy correlation was achieved by the nurse in the third phase of her training programme. The results are comparable with other reported studies involving medical and nurse colposcopists. Expertise in colposcopy examination can be incorporated into the broader role of a Nurse Practitioner working in the area of women's health.

Key words: Nurse colposcopist, colposcopy, advanced nursing practice.

Introduction

Since the introduction of the National Cervical Screening Programme (NCSP) in New Zealand there has been a decline in the incidence and mortality of cervical cancer (New Zealand Health Information Service, 1999). Similar decreases have been demonstrated in North America, Australia and England where organised cervical screening programmes are available (Bosch, de Sanjose, Castellsague & Munoz, 1997).

Women are advised to start cervical screening at aged 20 and should continue until aged 70. It is recommended women should have three yearly cervical smears to reduce the risk of developing cervical cancer (NCSP, 1999). Approximately 6 - 7% of New Zealand women have cervical smear abnormalities, the rate among Maori women is reported as 8-9% (Ministry Of Health (MOH), 2002a).

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Pre cancerous cervical smear abnormalities are graded using the revised Bethesda system and are based upon the severity of the abnormality. These abnormalities range from minor abnormalities such as low grade squamous intraepithelial lesions (LSIL) which includes cervical intraepithelial neoplasia one (CIN1) and human papilloma virus (HPV) through to high grade squamous intraepithelial lesions (HSIL) which encompasses CIN2/3 (NCSP, 1999). Women are also referred for colposcopy if they are experiencing post coital bleeding or there is clinical concern regarding the appearance of the cervix.

Women who have had a LSIL smear abnormality are advised to have a repeat smear in six months because of the high regression rate of these minor changes. If the repeat smear is still LSIL referral to colposcopy is recommended (NCSP, 1999). Conservative management is recommended of LSIL changes because up to 80% of these abnormalities will regress over a two-year period. Treatment may be necessary in cases where LSIL persists (NCSP; Singer & Monaghan, 2000).

Women with HSIL abnormalities are referred directly to colposcopy for assessment and should be seen within four weeks. Treatment is recommended if a HSIL is confirmed on biopsy (NCSP, 1999). The large loop excision of the transformation zone (LLETZ) is commonly performed to treat these abnormalities. However other methods such as laser cone, cold knife cone biopsy and hysterectomy may also be used (Singer & Monaghan, 2000).

Colposcopy plays an important role in the NCSP as it provides assessment, management and treatment of cancer precursors. Colposcopy is an examination technique in which a medical microscope is used to assess the lower genital tract. It assists in the identification of precancerous and cancerous lesions of the vulva, vagina and cervix and facilitates treatment. Many studies report the effectiveness of colposcopy as a diagnostic technique (Benedet, Matisic, & Bertrand, 2004a; Hopman, Kenemans, & Helmerhorst, 1998).

Colposcopy has traditionally been performed by gynaecologists in New Zealand. In the United Kingdom (UK) and United States of America (US) formal colposcopy training has been available to nurses, genitourinary physicians and family practice practitioners for a number of years. The role of the nurse colposcopist was developed in the UK and US to assist in the reduction of waiting times for colposcopy, improve flexibility of clinic times and access to colposcopy services for women, especially those of low income (Gifford & Stone, 1993; Hartz, 1995; Todd, Wilson, Etherington & Luesley, 2002). At National Women's Health (NWH) a nurse colposcopist role was developed in 2000.

The role offers New Zealand women choice for colposcopy care. The aim is to offer women the opportunity to be directly referred to a nurse colposcopist. Work with primary

health organisations is beginning in order to promote the availability of the service to women. The NCSP statistical report (MOH, 2002a) highlighted an increase in the number of Maori women choosing to use nurse smear takers. Offering referral to a nurse colposcopist may also increase attendance rates for Maori women.

The nurse colposcopist role should be incorporated into that of the nurse practitioner. This will be achieved through broadening the scope of practice of the role to include the wider aspects of women's health in order to meet Nursing Council of New Zealand nurse practitioner competencies (MOH, 2002b). A well women's nurse led clinic which includes cervical screening, sexual health screening, contraceptive advice, health promotion regarding breast screening, sexual health and smoking cessation is being developed by the nurse.

This paper presents findings from an audit of the diagnostic accuracy of the nurse colposcopist during her training period. It provides evidence of clinical competence in colposcopy examination having been achieved.

Literature Review

The available literature is limited regarding the evaluation of clinical effectiveness and the role of the nurse colposcopist. The author undertook a search using MEDLINE (1966-2004) and CINAHL (1960-2004) using the terms 'nurse colposcopist', 'nurse practitioner colposcopist', 'quality and colposcopy' and 'colposcopist'. Four studies reported assessment of the quality and clinical effectiveness of nurse colposcopists. Two additional papers describe the role of the nurse colposcopist in the UK. No reports of randomised control trials (RCT) on the effectiveness of the nurse colposcopist were found.

Todd et al. (2002) reported a 5-year retrospective clinical audit undertaken on the effectiveness of nurse colposcopists in a hospital setting in the UK. The study undertook a comparison of nurse and medical colposcopists. This allowed a benchmark comparison for the nurse colposcopists. The nurse colposcopists achieved 74.5% accuracy in predicting high-grade disease compared to the medical staff who achieved 67.7%. The nurse colposcopists achieved the National Health Service quality standard of >70% accuracy in predicting high-grade disease. Gifford and Stone (1993) and Hartz (1995) reported similar results in the US with nurse colposcopists exceeding the minimum colposcopy: histology correlation of 80%.

The introduction of nurse colposcopists has resulted in a decrease in clinic waiting times. Todd et al. (2002) reported a decrease in the mean waiting time for women from 14 weeks in 1993 to 4 weeks in 1998 when nurse colposcopists were introduced. A similar audit by Gifford and Stone (1993) saw a decrease in waiting times from 6 months to 1 month and a corresponding increase in attendance rates. This may partly relate to the introduction of a 'mobile' colposcopy service. Increased attendance rates assist in the efficient

utilisation of clinical resources. Cost effectiveness and the women's preference of provider have not been reported in any of the studies and should be the subject of further research (Todd et al.).

Training Programme Development

Training guidelines for nurse colposcopists published by the British Society of Colposcopy and Cervical Pathology [BSCCP] (BSCCP, 2000) were a useful guide for the development of the New Zealand training programme. The BSCCP training program is available for both doctors and nurses in the UK. Nurses are required to complete an additional laboratory module because histology and cytology are not part of the curriculum for general nurse training.

The New Zealand colposcopy training programme was developed by the nurse colposcopist and two medical colleagues and involved consultation with hospital management, the Director of Nursing, senior nursing staff, a consumer representative and legal advisors. The Director of Nursing recommended that the nurse should complete a Masters degree in clinical nursing and work towards achieving registration as a nurse practitioner. This also ensured a nursing focus was integrated into the training programme and assisted the nurse in developing her advanced nursing practice skills. Post graduate education plays an important role in developing advanced nursing practice roles providing nurses with the skills to undertake advanced health assessment, diagnostic reasoning, integrate research with practice, critically appraise, design and implement research and reflect on their practice (Hamric, 2004).

The training programme to achieve competence in colposcopy examination consisted of four phases, with each phase requiring sign off by a clinical mentor (medical practitioner) and the nurse on achieving competency. Consent for examination was obtained from women and documented in the clinical notes. A log-book was kept of all colposcopy examinations performed by the nurse. The first phase involved teaching the nurse to identify the normal cervix. This required 50 supervised colposcopy examinations of women who had previously been treated or were being seen for follow up of LSIL abnormalities.

Phase one of the training programme allowed the nurse to develop her assessment skills. It included visualising the cervix and vagina, recognising the normal transformation zone, identifying the squamocolumnar junction, assessing the transformation zone with saline, acetic acid and Lugols iodine. Cytology and histology experience was gained through attendance at the colposcopy multidisciplinary meetings.

The second phase consisted of 50 supervised colposcopic assessments of new patients. Phase two allowed the nurse to expand her practice which included obtaining a

gynaecological history, discussing results and management plans with women. This phase also enabled the nurse to recognise the abnormal transformation zone, perform biopsies and endocervical curettage. The nurse's ability to communicate with other health care providers and documentation of colposcopy findings was also assessed. Five case commentaries, each of 500 words in length, were completed. The case commentaries described the assessment and management of five women seen by the nurse.

The third phase consisted of 100 independent examinations of new patients with the findings checked immediately by the clinical mentor. The nurse completed five case commentaries, data management and audit for sign off in phase three.

The fourth phase was the treatment phase, which will be completed once the nurse colposcopist is able to work independently. This phase of the training is yet to be developed. The treatment phase would prepare the nurse to perform LLETZ procedures under local anaesthetic. The LLETZ procedure is the most common treatment of pre cancerous abnormalities performed at NWH (NWH, 2000). This would allow the nurse to provide continuity of care.

Audit Methods

The aim of the audit was to assess diagnostic accuracy of the nurse colposcopist during training using colposcopy: histology: cytology correlation. The results were compared with reports in the literature and provided a baseline for re-audit in the future. Each phase of the training was assessed individually to allow evaluation of the nurse's developing expertise. Data were collected retrospectively from the records of all the examinations performed during phase one and two of the nurse colposcopist's training programme. Prospective data collection was undertaken for phase three.

Colposcopy: histology: cytology correlation was measured by comparing the nurse's colposcopy diagnosis with the histology and cytology findings. Colposcopy and histology correlations are one method of measuring clinical effectiveness in colposcopy practice (Benedet et al. 2004a; Hartz, 1995). If more than one biopsy was taken, the specimen with the most significant abnormality was used to correlate with the colposcopic impression. When no biopsy was performed, the cytology taken at the time of examination was used to correlate with the colposcopic impression. The correct correlation results are reported as a percentage, which is consistent with the results in the literature and allows comparison.

Results

Each phase of the training was audited to allow evaluation of the developing role. The results are presented by each phase.

Phase One

The aim of the initial phase was to enable the nurse to recognise the

'normal' cervix. Under supervision sixty women were assessed colposcopically following:

a) Large Loop Excision of the Transformation Zone (LLETZ) procedure (n=41) or

b) Women presenting for follow up of low-grade cervical intraepithelial neoplasia (CIN) (n=19) between July and December 2000.

In these groups the colposcopy: cytology: histology correlation was 87% (52/60). There was one case where the cytology was reported as CIN2/3 following a normal colposcopy examination. In this case the examination was unsatisfactory, as the squamocolumnar junction (SCJ) was not visible (Table 1).

In phase one of the training programme the majority of correlations compared colposcopic impression with cytology rather than histology. This was due to a large proportion of the examinations being normal; thus biopsies were not performed. The results confirmed that the nurse colposcopist was able identify the 'normal' cervix with a correct correlation of 91% (42/46).

Table 1: Analysis of Phase 1 results.

Colposcopic Findings	Histology and Cytology Results		
	Normal	CIN1/HPV	CIN2/3
Normal n=42/46	**42 (91%)**	3*	1*
CIN1/HPV n= 9/12	3†	**9 (75%)**	0
CIN2/3 n= 1/2	0	1‡	**1 (50%)**

Bold - Correct Correlation **Overall correlation 87%**

* Under diagnosis of CIN1/HPV and CIN2/3 † Over diagnosis of CIN1/HPV

‡ Over diagnosis of CIN2/3

Phase Two

The second phase of the training programme between January and July 2001 included fifty, new patient colposcopic assessments performed under supervision. A range of cases was selected to ensure the nurse had the opportunity to assess a variety of abnormalities. In this group the overall colposcopy: cytology: histology correlation was 78% (39/50) (Table 2).

Table 2: Analysis of phase 2 results.

Colposcopic Findings	Histology and Cytology Results		
	Normal	CIN1/HPV	CIN2/3
Normal n=15/18	**15(83%)**	3*	0
CIN1/HPV n= 12/16	2†	**12(75%)**	2‡
CIN2/3 n= 12/16	1¥	3¥	**12(75%)**

Bold - Correct Correlation **Overall correlation 78%**

* Under diagnosis of CIN1/HPV †Over diagnosis of CIN1/HPV

‡ Under diagnosis of CIN2/3 ¥ Over diagnosis of CIN2/3

Phase Three

The third phase of the training programme involved 100 independent colposcopy assessments between July 2001 and March 2002 with immediate follow up examination by the clinical mentor. In this group the colposcopy: cytology: histology correlation was 82% (82/100). In phase three the nurse colposcopist demonstrated a higher correct correlation of high-grade disease compared to low-grade disease (Table 3.).

Table 3: Analysis of phase 3 results.

Colposcopic Findings	Histology and Cytology Results		
	Normal	CIN1/HPV	CIN2/3
Normal n=26/29	**26(90%)**	3*	0
CIN1/HPV n= 32/45	7†	**32(71%)**	6‡
CIN2/3 n= 24/26	0	2¥	**24(92%)**

Bold - Correct Correlation **Overall correlation 82%**

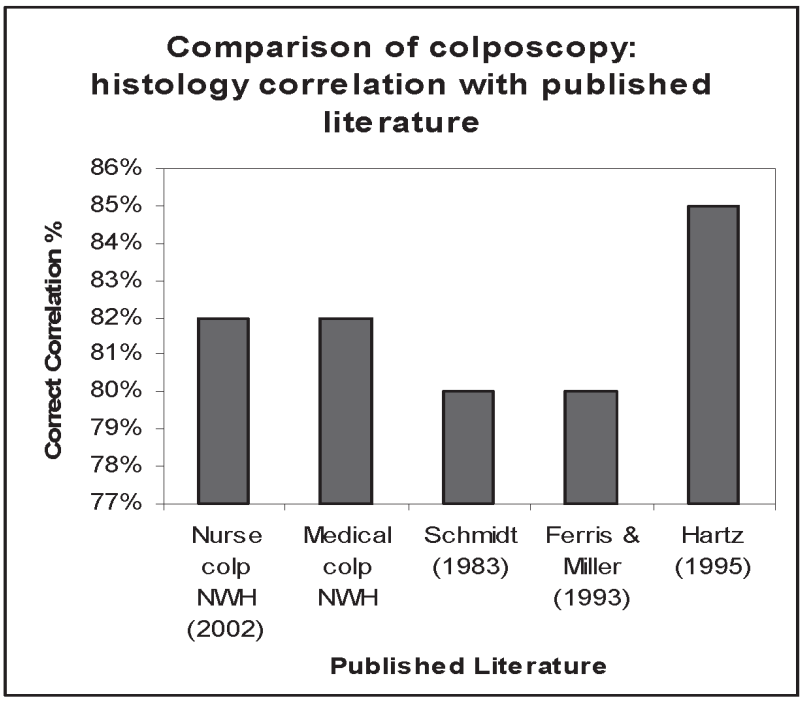
* Under diagnosis of CIN1/HPV † Over diagnosis of CIN1/HPV

‡ Under diagnosis of CIN2/3 ¥ Over diagnosis of CIN2/3

Discussion

The nurse colposcopist achieved an 82% correct correlation in the third phase of the training programme. This result is identical to the medical colposcopists at NWH who also achieved 82% in a separate colposcopy: histology correlation audit (NWH, 2000). The results compared favourably with the minimum correlation of 80% defined in the medical literature (Benedet, Anderson, Matisic, & Miller, 1991; Ferris & Miller, 1993; Schmidt, 1983). The nurse achieved results comparable to nurse practitioners in the international literature. Hartz (1995) reported an 85% colposcopy: histology correlation accuracy in retrospective review of a group of nurse practitioner colposcopists (Table 4.).

Table 4: Comparison of the nurse with available literature



A large retrospective study by Benedet, Matisic and Bertrand (2004b) has reported that colposcopic accuracy increases when detecting HSIL. The correct correlation for the HSIL was higher compared to LSIL for the nurse in phase three reinforcing the Benedet et al. results.

The limitations of colposcopic and histological correlations are well recognised in the literature and occur for a number of reasons. Colposcopy is a subjective assessment and not all clinical appearances of CIN have distinctive colposcopic appearances, so interpretation error can occur. Issues with sampling error can occur when the colposcopist does not sample the most abnormal area or the biopsy specimen is cross cut. Biopsy is required to establish a diagnosis

and is considered the gold standard in colposcopy practice (Benedet et al., 2004a; Hopman et al., 1998; Singer & Monaghan, 2000). It is important to recognise that both cytology and histology also involve subjective interpretation and significant inter and intra observer variation is recognised. Thus producing false negative and positive results in cytology and histology. All of these factors influence correlation results (Da Forno, Holbrook, Nunns & Shaw, 2003; Ismail et al., 1989; McGoogan, 1997; Soutter, 1991). It is important to assess discrepancies to determine whether review of cytology, histology and colposcopy is required as review may resolve such discrepancies.

Women in whom colposcopy examination was unsatisfactory (i.e. SCJ not visible) were included in this audit. Exclusion of these cases may have increased the correlation rate for the nurse in the audit as an unsatisfactory colposcopy can make it difficult for the colposcopist to make a definitive diagnosis. In a study by Benedet et al. (2004a) cases were excluded if the SCJ was not visible and/or when the upper limit of the lesion was not visible. These cases were excluded to provide clinicians with an ideal examination environment to determine the colposcopist's diagnostic ability. However this offers a selective approach to correlation which creates reporting bias.

A possible source of bias in this audit was the influence of the medical colposcopist on the nurse colposcopist with regard to clinical diagnosis. In order to reduce this bias the nurse colposcopist documented her own clinical findings separately from those of the mentor. The nurse and medical colposcopist did not always agree on clinical diagnosis. Inter-observer variability has been reported in colposcopy practice and the level of agreement improves with high grade disease (Hopman et al., 1998).

This audit has demonstrated the nurse does not need to modify her practice as the correlation achieved is comparable with local and international literature. The training programmes for the nurse colposcopist have been successful as evidenced through the correlation results achieved. The audit also provided the baseline for follow up audits of the nurse colposcopist role. A follow up audit between October 2002 and September 2003 demonstrated an 83% (44/53) correct correlation.

The audit included one aspect of clinical effectiveness and future audits of the role could include indicators such as biopsy adequacy, non-attendance rate, evidence of CIN / HPV on biopsy, documentation practices and patient satisfaction. Todd et al. (2002) has recommended that a RCT is required to truly assess the role of the nurse colposcopist and evaluate cost benefits.

The development of the role in New Zealand has been hindered by regulatory policy and the nurse colposcopist continues to work under supervision of her clinical mentor. The original policy set out by the National Screening Team (2000) stated that only appropriately trained

sexual health physicians and gynaecologists should perform colposcopy in the public sector of New Zealand. Review of these standards in 2002/2003 saw a change in definition as a direct response to the nurse colposcopist role development at NWH. A consultative period was undertaken by the MOH and the policy was changed to state "Colposcopists participating in the NCSP must: be qualified and registered to practice in New Zealand and have professional accountability and responsibility for adequate training standards" (MOH, 2003, p. 6.31).

A meeting with the National Screening Unit (NSU) to discuss the introduction of the nurse colposcopist role following the policy change in July 2003 led to further refining of the policy. The NSU recommends that for nurses to practise as a nurse colposcopist the Nursing Council of New Zealand must endorse the nurse as a nurse practitioner.

Conclusion

The findings of this clinical audit provide convincing evidence that the nurse colposcopist after completing formal training can provide clinically effective care. Her performance compares favourably with that of her medical colleagues and reports in the international literature (Ferris & Miller, 1993; Gifford & Stone, 1993; Hartz, 1995; Morris, McLean, Bishop, & Harlow, 1998; NWH, 2000; Schmidt, 1983; Todd et al, 2002). Nurse colposcopists should work to agreed guidelines, undertake regular audit of their practice and ongoing professional development. The development of the role offers women a new choice of colposcopy provider and can improve access to colposcopy services. It is also evidence of the evolutionary nature of the nurse practitioner role.

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