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# Long-Term Worries after Colposcopy: Which Women Are at Increased Risk?

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A B S T R A C T

*Background:* A colposcopy examination is the main management option for women with an abnormal cervical screening test result. Although some women experience adverse psychological effects after colposcopy, those at greatest risk are unknown. We investigated predictors of worries about cervical cancer, sex, future fertility and general health during 12 to 30 months after colposcopy.
*Methods:* We invited 1,515 women, aged 20 to 59 years with low-grade cervical cytology who attended colposcopy to complete questionnaires at recruitment (~8 weeks after cytology result) and after 12, 18, 24, and 30 months of follow up. Outcomes were worries about having cervical cancer, having sex, future fertility, and general health at any time during follow-up. Factors significantly associated with each outcome were identified using multiple logistic regression.
*Results:* At one or more time points during follow-up, 40% of women reported worries about having cervical cancer, 26% about having sex, 24% about future fertility, and 60% about general health. For all outcomes except sex, worries reported at recruitment were associated with significantly increased risk of worries during follow-up. Significant anxiety at recruitment was associated with all worries during follow-up. Women diagnosed with CIN2+ had significantly higher risks of worries about cervical cancer and future fertility. Management received was associated significantly with worries about cervical cancer and having sex. Younger women significantly more often reported worries about future fertility, whereas women who had children had reduced risk of future fertility worries but increased risk of cervical cancer worries.
*Conclusion:* Clinical, sociodemographic, lifestyle, and psychological factors predicted risk of reporting worries after colposcopy.



Referral for a hospital-based colposcopy examination is the main management option for women who have an abnormal cervical screening test result (Massad et al., 2013; National Health and Medical Research Council, 2005; NHS Cervical Screening Programme, 2010), with subsequent investigations and treatment based on the colposcopy findings. It has long been recognized that attending for a colposcopy, like any other hospital-based procedure, can provoke considerable anticipatory anxiety (Marteau, 1989). In recent years, evidence has also

Group members are listed in Appendix A.

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accrued that some women experience adverse psychological effects following colposcopy and related procedures (see, for example, Bell et al., 1995; Hellsten, Lindqvist, & Sjöström, 2008b; O'Connor et al., 2015; Orbell, Hagger, Brown, & Tidy, 2004). Several studies show that women undergoing colposcopy have poorer psychological well-being compared with control groups (Bell et al., 1995; Gath, Hallam, Mynors-Wallis, Day, & Bond, 1995; Hellsten, Sjostrom, & Lindqvist, 2008a; Hellsten et al., 2008b). In addition, some studies indicate that notable proportions of women may experience adverse psychological effects months after colposcopy (Heinonen, Tapper, Leminen, Sintonen, & Roine, 2013; Hellsten et al., 2008a; Sharp et al., 2011)

Despite this accumulating evidence, little is known about predictors of post-colposcopy psychological well-being (O'Connor et al., 2015). We have previously shown that having an abnormal (as compared with a normal) transformation zone at colposcopy is a strong predictor of distress six weeks afterwards (Sharp et al., 2011). Similarly, Orbell et al. (2004) reported that presence of higher grade disease (cervical intraepithelial neoplasia [CIN] grade 2/3) was associated with higher anxiety scores 1 week after colposcopy. In another article from the same study, women who had treatment at the same appointment as colposcopy had lower anxiety scores than those who underwent biopsy and were subsequently recalled for treatment if required (Balasubramani, Orbell, Hagger, Brown, & Tidy, 2007). A small number of studies have suggested that psychosocial factors (such as coping strategies) and sociodemographic factors (such as marital status or socioeconomic status) may also predict post-colposcopy psychological outcomes (Hellsten et al., 2008a; Orbell et al., 2004; Tiersma et al., 2005). In addition to there being few studies, some of those available had small sample sizes and most undertook only univariate analyses, failing to take into account the fact that the potential predictors of psychological well-being may be interrelated.

To extend and strengthen this evidence base, we undertook a large, population-based study to investigate associations between clinical, sociodemographic, lifestyle, and psychosocial factors and risk of context-specific worries during 30 months follow-up after colposcopy and related procedures.

## Material and Methods

### *Study Population*

The analysis was nested within the colposcopy arm of the multicenter Trial of Management of Borderline and Other Low-grade Abnormal smears (TOMBOLA). Full details are provided elsewhere (Cotton et al., 2006; TOMBOLA Group, 2009a, 2009b). Briefly, eligible women were aged 20 to 59 years and had a recent low-grade cytology test (mild dyskaryosis or borderline nuclear abnormalities [BNA]) taken as part of routine screening from October 1999 to October 2002. Those who consented were randomized to cytologic surveillance (repeat cytology tests in primary care) or a hospital-based colposcopic examination.

### *Procedures and Follow-up*

In the colposcopy arm, consenting women were further randomized to immediate treatment by large loop excision of the transformation zone or punch biopsies with recall for treatment if required. Women with a normal transformation zone underwent colposcopy only and were discharged to follow-up in primary care by a cytology test after 12 months. Women whose transformation zone appeared abnormal received the intervention assigned by randomization. In the biopsy and selective recall arm, targeted punch biopsies were taken and women with CIN2/3 on histology were recalled for treatment, usually by loop excision, whereas those with no CIN or CIN1 did not receive any further treatment at this time. In the immediate loop excision arm, the whole transformation zone, including the abnormality, was removed. Follow-up after punch biopsies or loop excision was by 6-monthly cytology tests in primary care. Results of these tests determined subsequent actions (i.e., next recommended cytology test date or colposcopy referral). Follow-up continued for 3 years to an exit examination at the colposcopy clinic.

### *Ethical Approval*

Ethical approval was obtained from the joint Research Ethics Committee of NHS Grampian and the University of Aberdeen, the Tayside Committee on Medical Research Ethics and the Nottingham Research Ethics Committee. All participants provided written, informed consent.

### *Psychological Assessments*

Women recruited to TOMBOLA from February 2001 onward (when the psychosocial questionnaires were introduced) who had an adequate colposcopy examination and consented to the second randomization were included in this analysis. Psychological assessments were conducted at recruitment to the trial and before the first randomization (T0; baseline assessment), and at 12 (T1), 18 (T2), 24 (T3), and 30 (T4) months after recruitment. The T0 questionnaire was completed at the recruitment clinic and the T1 through T4 questionnaires by post. At each timepoint women completed the Process Outcome Specific Measure (POSM), which covers a range of specific issues relevant to women who have a low-grade cytology test and subsequent follow-up (Gray et al., 2005). The instrument has acceptable test–retest reliability and internal consistency. In addition, all but one of the POSM questions correlates more highly with the POSM total score than with the anxiety and depression subscales of the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983), indicating that it also has discriminant validity. For this analysis, four POSM questions were considered: worries about having cervical cancer, worries about having sex, worries about future fertility, and worries about general health. The baseline questions (T0) related to the time since receiving the abnormal cytology test result; those during follow-up (T1-T4) related to the last month. The baseline assessment (T0) also provided data on potential predictors and included questions on sociodemographics and lifestyle (such as educational level and reproductive history); the Multidimensional Health Locus of Control Scale (MHLCS), which measures three dimensions of health locus of control (chance, internal and powerful others; Wallston, Wallston, & DeVellis, 1978); and the HADS, which measures anxiety and depression (Zigmond & Snaith, 1983).

### *Statistical Analysis*

Each of the four worry outcomes was analyzed separately. Women's responses were reported on 6-point Likert-type scales ranging from "strongly agree" to "strongly disagree"; for analysis, these scales were collapsed to binary variables (agree/disagree). To be included in the analysis women had to have responded to one or more of the follow-up questionnaires (i.e., the questionnaires