**Abstract**

Women delay gynecological care for various reasons, including practical difficulties and self-consciousness about having health professionals view their genitals. Experiences of and intentions to have pelvic examinations, attitudes toward female genitals, and genital self-image were investigated in young Asian and non-Asian women. Past experience of having had pelvic screening and fears about screening were the strongest predictors of intentions to have pelvic examinations in future. Asian women were significantly less likely to have had a pelvic examination compared to non-Asian women, but there were no group differences in attitudes toward female genitals, genital self-image, or intentions to have pelvic examinations.

Pelvic examinations and cervical screening are important health behaviors for women. In the United Kingdom (U.K.), women between the ages of 25 and 64 are invited for free screening every three to five years (depending on their age) under the Cervical Screening Program (Health & Social Care Information Centre, 2012). Overall estimates show a gradual increase in the percentage of women who are screened each year. Importantly, since the cervical screening program began in 1988, the incidence rates of cervical cancer in England have halved (Trent Cancer Registry, 2011). Despite these encouraging statistics, the percentage of younger women (aged 25-29 years) who have been screened has been steadily *decreasing* since 2001 (Health & Social Care Information Centre, 2012).

Various factors have been shown to affect a woman’s decision to undergo a pelvic examination. Aside from practical issues (e.g., busy work and household commitments, difficulty arranging a convenient appointment time) that contribute to non-screening (Waller, Bartoszek, Marlow, & Wardle, 2009; Waller, Jackowska, Marlow, & Wardle, 2011), various demographic and psychological factors have also proved relevant in pelvic examination and screening behaviors. Age has been consistently associated with attendance for pelvic exams, with younger women less likely to attend for screening than older women (Bang, Yadegarfar, Soljak, & Majeed, 2012; Waller et al., 2011). Socioeconomic factors such as lower levels of education (Moser, Patrick, & Beral, 2009; Sabates & Feinstein, 2006; Sutton & Rutherford, 2005), unemployment (Majeed, Cook, & Anderson, 1994), and social deprivation and poverty (Waller et al., 2011; Webb, Richardson, & Pickles, 2004; Weller & Campbell, 2009) have also been reported as barriers to cervical screening.

Psychological factors have also been shown to reduce the likelihood of cervical screening and pelvic examination. Anxiety and embarrassment are oft-cited barriers to seeking pelvic exams (Crombie, Orbell, Johnston, Robertson, & Kenicer, 1995; Waller et al., 2011). Research has shown that issues of shame and embarrassment may be particularly relevant for ethnic minority women, particularly those from Asian backgrounds. Modesty was found to be a barrier to cervical screening in Hong Kong Chinese women who expressed fear of being exposed to a stranger (Holroyd, Twinn, & Adab, 2004). Further, in a qualitative Malaysian study, most women identified pelvic exams as a major source of anxiety, embarrassment, and loss of privacy, particularly when conducted by a male physician (Wong, Wong, Low, Khoo, & Shuib, 2008). The anticipation of embarrassment and anxiety may help explain the lower attendance of ethnic minority women in cervical screening programs reported in several studies (Moser, Patrick, & Beral, 2009; Sabates & Feinstein, 2006; Weller & Campbell, 2009).

General body image concerns also have been shown to affect women’s likelihood of attending pelvic exams (Amy, Aalborg, Lyons, & Keranen, 2006). A new line of research exploring genital self-image specifically and attitudes toward female genitals, and their relationship to health behaviors, is showing promise (Herbenick, 2009). Several studies have shown that women’s sexual behaviors may be influenced by concerns related to their genital appearance, size, taste, or smell (Braun, 2005; Braun & Kitzinger, 2001). A recent study reported that college women in the United States who had engaged in at least one pelvic exam during the past 24 months had a more positive genital self-image than those who had not had a pelvic exam (DeMaria, Hollub, & Herbenick, 2012). Thus, women’s genital self-image and their attitudes toward female genitals may also be playing an important role in accessing pelvic exams.

One currently unexplored area is potential ethnic differences in women’s genital self-image and attitudes toward female genitals. Women may adopt negative attitudes toward women’s genitals as a result of cultural level scripts that suggest that women’s genitals are unclean or ugly (Braun & Wilkinson, 2001). Woo, Brotto, and Gorzalka (2009) found that sexual knowledge, attitudes, and behaviour all influenced whether East Asian women had undergone cervical screening or not. In the U.K., Robb et al. (2010) found that awareness of cervical screening was significantly lower in individuals who were members of one of the six largest ethnic minority groups, four of whom were Asian. South Asian women in the U.K. in particular have had low rates of uptake of cervical screening compared to non-Asian women (Szczepura, 2005).

Combined with the known potential psychological barriers of embarrassment and modesty shown to be especially relevant in women of Asian descent, the low rates of pelvic examination uptake in these populations is an interesting test case to examine whether and how Asian women’s attitudes toward female genitals and their own genital self-image may be affecting their willingness to undergo pelvic exams. A primary group of interest within both Asian and non-Asian groups is young women, given their lower likelihood of accessing cervical screening. As such, the primary aim of this study was to examine the attitudes and perceptions of young Asian and non-Asian women in the U.K. toward female genitals and their own genital self-image, and the influence of these on their intentions to have a pelvic exam. A secondary objective was to examine whether a range of other demographic and background variables e.g., sexual experience, relationship status identified as important in previous research and previous experiences of pelvic exams were associated with intentions to have a pelvic exam in future. Although research has documented that there is often a gap between people’s intentions and their actual behaviour (Sheeran & Orbell, 2000), we assessed intentions as well as past history of pelvic exams in part because we anticipated that younger women in our sample would not have yet had their first pelvic screening.

**Method**

**Participants**

The participants were young Asian and non-Asian women who were residents in the U.K. Inclusion criteria were: (1) female aged between 18 to 30 years old; (2) of Euro-British or Asian descent; (3) resident in Britain for at least 6 months; (4) and fluent in written and spoken English.

**Measures**

*Demographic Questionnaire*

Information was obtained on age, ethnicity, sexual orientation (heterosexual/straight; bisexual; lesbian), marital status, current sexual relationship status (in a current steady relationship/single/casually dating), years lived in the U.K, and pelvic exam history. Regarding sexual experience, two questions were asked: “Are you currently in a sexual relationship?” (yes/no) and “Have you had any experience of heterosexual intercourse? (by this we mean penile-vaginal intercourse)” (yes/no). Regarding pelvic exam history, women were asked “Have you ever had a pelvic examination? (yes/no)”.

*Attitudes toward Women’s Genitals Scale (ATWGS)*

The ATWGS is a reliable and valid 10-item measure of individuals’ attitudes toward women’sgenitals (Herbenick, 2009). Ratings to items such as “Women’s genitals are beautiful” are made on a 4-point likert scale (1= strongly disagree to 4 = strongly agree). The total score range is 10 - 40, with higher scores indicating a more positive attitude toward women’s genitals (Herbenick, 2009). Internal consistency in the current sample was good (α = .88).

*The Female Genital Self-image Scale (FGSIS)*

The FGSIS is a validated scale developed by Herbenick and Reece (2010) to assess women’s feelings and beliefs about their own genitals. The measure consists of seven items, rated on a 4-point likert scale (1 = strongly disagree to 4 = strongly agree). The total FGSIS score range is 7 to 28, with higher scores indicating a more positive genital self-image (Herbenick & Reece, 2010). Internal consistency in the current sample was good (α = .84).

*Experience and Intentions toward Pelvic Examination Questionnaire (EIPE)*

A shortened version of a questionnaire developed by Wijma, Gullberg, and Kjessler, (1998) was used to assess women’s past experiences of having had a pelvic exam and their intentions of having a pelvic exam in future. The revised version used (labelled the EIPE) included four questions on the experience, comfort, fear, and apprehension of discomfort/pain, of pelvic exams. The questions were: How would you rate your most recent pelvic examination on the scale below? (1 = extremely negative to 5 = extremely positive); “How would you rate your comfort level during the most recent pelvic examination you had?” (1= extremely uncomfortable to 5 = extremely comfortable); “Do you have any fear in anticipation of a pelvic examination?” (1 = extremely afraid to 5 = not at all afraid); “How would you rate your apprehension of discomfort/pain during a pelvic examination?” (1 = extremely apprehensive to 5 = not at all apprehensive). The questions relating to experience and comfort were only asked of women who reported having had a pelvic exam; however, all of the participants were asked about fear of and apprehension about having a pelvic exam. All women were also asked intentions to seek a pelvic exam (“Based on your experience, would you seek a pelvic examination in the near future?”), with response options yes, no, and unsure.

**Procedure**

This was an online, cross-sectional study, using iSurvey (a university web-based survey generation and research tool for distributing online questionnaires). Student societies and organisations (including Asian student groups) from the University of Southampton and from other universities around the U.K. were contacted via email and asked if they would be willing to send out emails about the study to their members. Social networking sites (e.g., Facebook) were used to advertise the study and posters were also placed around the campus to recruit staff members and students. Undergraduate Psychology students received course credit for their participation.

 After reading a study information sheet, and confirming eligibility and consent to participate, women completed the questionnaires online. Approval of the study was obtained from a university ethics committee.

**Data Analyses**

Data were analysed using IBM SPSS (Statistical Package for the Social Sciences) Statistics (version 20). Descriptive statistics (means and standard deviations or percentages) were calculated to describe the characteristics of the sample (see Table 1). For univariate analyses, independent t-tests were used to identify differences between Asian and Non-Asian women for age, attitudes towards women’s genitals, genital self-image, positive experience, comfort, fear, and apprehension about having a pelvic exam. Independent t-tests were also used to identify differences in age, attitudes towards women’s genitals, genital self-image, positive experience, comfort, fears and apprehensions about having a pelvic exam between those who did and did not intend to have a pelvic exam in the near future.

Chi-square tests were used to identify differences between Asian and Non-Asian women for number of years living in the UK, sexual experience, being in a steady relationship, being in a sexual relationship, previous experience of a pelvic exam, and intention to have a pelvic exam in the near future. Chi-square tests were also used to identify differences in number of years living in the UK, sexual experience, being in a steady relationship, being in a sexual relationship, and previous experience of a pelvic exam between those who did and did not intend to have a pelvic exam in the near future.

For multivariate analyses, two binary logistic regressions were carried out. The first was conducted using the enter method to examine whether ethnicity (Asian/non-Asian), attitudes towards women’s genitals, and genital self-image could predict intention to have a pelvic exam. The second binary logistic regression was conducted (using the enter method) to test an expanded model that also took into account the effects of other potential predictors on intention to have a pelvic exam identified in univariate analyses. Potential predictors included in the second model were ethnicity (Asian/non-Asian), ATWGS score, FGSIS score, years resident in the UK, sexual experience, being in a sexual relationship, previous experience of a pelvic exam, and fear and apprehension about having a pelvic exam.

**Results**

A total of 256 women attempted the online survey. Seven women did not meet the inclusion criteria. Of the remaining participants, 97 women did not complete any questions, 15 attempted the questionnaire but did not complete all the sections, and 137 completed the questionnaires (defined as answered the survey from the first questionnaire until the last but may not necessarily have answered all the items).

Descriptive and univariate analyses are presented in Table 1. Participants were aged between 18-30 years, 47% were Asian, and 37% intended to have a pelvic exam in the near future. Asian women were significantly older than the non-Asian women, *t*(135) = -2.941, *p* = .004, Cohen’s d = -0.51; however, age was not significantly associated with intentions to have a pelvic exam (*t*(135) *=* -1.628, *p* = .106, Cohen’s d = 0.28).

There was a significant difference in the number of years Asian and non-Asian women had lived in the UK (*χ2*(5) = 85.11, *p* < .001). Adjusted residuals indicated that Asian women were more likely to have lived in the UK for 3 years or less (adjusted residuals: <1 year = 6.2, 1-3 years = 3.3), and non-Asian women were more likely to have lived in the UK for over 15 years (adjusted residuals: 15-21 years = 5.4, 21-25 years = 4.5, over 25 years = 2.3). Differences also existed in intention to have a pelvic exam depending on the number of years women had lived in the UK (*χ2*(5) = 11.849, *p* = .037). Women were more likely to be unsure about or not intend to have a pelvic exam than intend to have a pelvic exam if they had been living in the UK for one year or less (adjusted residual: 2.1)

The majority of women in this study were heterosexual; however, Asian women were significantly more likely than non-Asian women to identify as heterosexual, *χ2*(2) = 7.45, *p* = .024, adjusted residual: 2.7. A significantly higher proportion of non-Asian women had experience of penile-vaginal intercourse than Asian women, *χ2*(1) = 33.12, *p* < .001, adjusted residual = 5.8. Only 2 women were married; however, more non-Asian women reported being in a steady relationship (*χ2*(1) = 5.86, *p* = .017, adjusted residual = 2.4) or a sexual relationship (*χ2*(1) = 25.58, *p* < .001, adjusted residual = 5.1) than Asian women. Women were significantly more likely to intend to have a pelvic exam if they had experienced sexual intercourse (*χ2*(1) = 10.82, *p* = .001, adjusted residual = 3.3), were in a steady relationship (*χ2*(1) = 5.58, *p* = .021, adjusted residual = 2.4), or were in a sexual relationship (*χ2*(1) = 10.62, *p* = .001, adjusted residual = 3.3).

 Only 36 (26%) participants had ever had a pelvic exam before, and those who had were significantly more likely to be non-Asian than Asian, *χ2*(1) = 17.71, *p* < .001, adjusted residual = 4.2. However, although 50 (36.5%) women did intend to have a pelvic exam, differences between non-Asian women and Asian women in their intentions to have a pelvic exam did not reach significance (*χ2*(1) = 3.63, *p* = .075). Regardless of ethnicity, however, women were more likely to intend to have a pelvic exam if they had experienced one in the past (*χ2*(1) = 19.18, *p* < .001, adjusted residual = 4.4).

There were no significant differences in attitudes toward women’s genitals between non-Asian and Asian women, *t*(135) = -.067, *p* = .95, Cohen’s *d* = -0.01, or between women who did or were unsure/did not intend to have a pelvic exam, *t*(135) = -1.805, *p* = .073, Cohen’s *d* = -0.31. No significant differences were found between Asian and non-Asian women for genital self-image, *t*(135) = .417, *p* = .68, Cohen’s *d* = 0.07. However, women who intended to have a pelvic exam had significantly higher female genital self-image scores than those who were unsure/did not, *t*(135) = -2.797, *p* = .006, Cohen’s *d* = -0.48.

Analysis of the EIPE questionnaire items showed that although positive experience and comfort were not associated with intention to have a pelvic exam in the near future (positive experience: *t*(32) = -.521, *p* = .606, Cohen’s *d* = -0.18; comfort: *t*(12.6) = -.938, *p* = .366, Cohen’s *d* = -0.53), the intention to have a pelvic exam was significantly associated with lower levels of fear and apprehension of discomfort/pain (fear: *t*(135) = -5.446, *p* <.001, Cohen’s *d* = -0.94; apprehension: *t*(135) = -2.973, *p* = .003, Cohen’s *d* =-0.51). No significant differences were found between Asian and non-Asian women on any of the EIPE variables (positive experience: *t*(32) = .560, *p* = .579, Cohen’s *d* =0.20; comfort: *t*(32) = 1.061, *p* = .297, Cohen’s *d* = 0.38; fear: *t*(135) = -.117, *p* = .907, Cohen’s *d* = -0.02; apprehension: *t*(135) = -.841, *p* = .402, Cohen’s *d* = -0.15).

Multivariate analyses are presented in Table 2. Binary logistic regression was carried out to examine whether intention to have a pelvic exam could be predicted by ethnicity (Asian/non-Asian), attitudes toward women’s genitals, and genital self-image. Results showed a significant overall model fit (model *χ2*(*df* = 3, *N* = 137) = 11.201, *p* = .011; Nagelkerke R square = 0.107; Hosmer and Lemeshow *χ*2(*df* = 8) = 2.456, *p* = .964), with the model accounting for 10% of the variance in intention to have a pelvic exam. Of the three predictors included in the model, only genital self-image significantly predicted intention to have a pelvic exam.

 The model was then expanded to control for the effects of variables relevant to intention to have a pelvic exam identified in univariate analyses (years in the UK, previous sexual experience, being in a steady relationship, being in a sexual relationship, previous experience of a pelvic exam, fear, and apprehension about having a pelvic exam). This model also found a significant overall model fit (model *χ2*(*df* = 10, *N* = 137) = 44.686, *p* < .001; Nagelkerke R square = 0.381; Hosmer and Lemeshow *χ*2(*df* = 8) = 10.661, *p* = .222), accounting for 38% of the variance in intention to have a pelvic exam. Within this expanded model, intention to have a pelvic exam was significantly predicted by previous experience of a pelvic exam and fear about having a pelvic exam.

**Discussion**

The findings suggested that women’s genital self-image may be more important than their general attitudes toward female genitals in understanding barriers toward pelvic examination behaviors. Asian and non-Asian women did not differ in their attitudes toward female genitals and their genital self-image, suggesting that, regardless of ethnic background, women in this sample had fairly similar perceptions of female genitals and their own genitals. Non-Asian women were more likely than Asian women to report having had a pelvic examination; these findings are consistent with previous reports on low rates of cervical smear testing among Asian, compared with non-Asian, women (Brotto, Chou, Singh, & Woo, 2008; Woo et al., 2009). However, Asian women were *not* significantly more likely than non-Asian women to state that they would seek a pelvic examination in future.

 Asian participants were less likely to have had penile-vaginal intercourse compared to non-Asian participants. Not having had sexual intercourse may lead young Asian women to perceive that they do not need pelvic examinations. Women who have had sexual experience may be more likely to have had pelvic examinations because of the requirement of yearly exams to renew birth control prescriptions or because they experience symptoms that initiate seeking gynaecological care (DeMaria et al., 2012). Woo et al. (2009) found that sexually active Canadian Chinese women were more likely to have had a Pap test than women of the same ethnic group who were not sexually active. Another possible explanation for the differences in pelvic examination history is that some of the Asian participants may have been in the U.K. on student visas, and therefore not registered with the National Health Service and not receiving reminders for cervical screening.

Past experience of having had a pelvic examination and fear about having a pelvic examination were the strongest predictors of women’s intention to have a pelvic examination in future. To our knowledge, although many studies have explored emotional factors such as embarrassment and anxiety as possible barriers to pelvic screening, researchers have seldom assessed women’s specific fears about having a pelvic examination. Waller and colleagues (2009) did assess “fear of pain” and “worry about what the test might find” as possible barriers to screening; they concluded that practical barriers were more predictive of pelvic screening uptake than emotional factors. Their sample, however, included women from 26-64 years and it seems likely that fear about having a pelvic exam would be more pronounced in younger women, such as those in the current sample (mean age 22.27 years). Future qualitative studies should explore the specific aspects of the procedure that women are most fearful of and whether fears are based on misunderstanding or lack of knowledge about pelvic examinations.

While previous research has demonstrated the importance of age in predicting likelihood of pelvic exam screening (Bang et al., 2012; Waller et al., 2011), we found no relationship between age and intentions to have a pelvic exam in this sample. The most likely reason for this is that we sampled a fairly narrow age range of women (18-30 years) compared with previous studies (Bang et al., 2012; Waller et al., 2011).

Previous research has reported that female genital self-image was a significant predictor of gynaecological exam behaviors (DeMaria et al., 2012; Herbenick et al., 2011). In the current study, although in the first regression model genital self-image was a significant predictor of intentions to have a pelvic exam in future, when other relevant variables (years resident in U.K., sexual and relationship history, and fears and apprehensions about having a pelvic exam) were added to the model, genital self-image dropped out as a significant predictor. Interestingly, DeMaria et al. (2011) reported genital self-image was only predictive when paired with having had vaginal-penile intercourse or anal intercourse in the past three months; having had a vaginal intercourse partner was the primary predictor of pelvic exam behavior. This suggests that recent sexual behavior, and associated self-perceived risks, may be a stronger predictor of gynecological exam behaviors than genital self-image.

There were several limitations of the current study. The sample was a small convenience sample of women who were likely more educated and more fluent in English than Asian women in the general U.K. population (Martin et al., 2004). The fact that fluency in English was one of the participant inclusion criteria may partly explain the lack of any significant differences between Asian and non-Asian women in intentions to seek a pelvic exam. Another potential limitation was that although we obtained information on the number of times women had sought pelvic exams, we did not obtain information on how long ago the last pelvic exam was done. If participants had recently had a pelvic exam, they may have been less likely to have reported that they would seek a pelvic exam in the near future.

The total mean score for ATWGS was somewhat higher in this sample compared to Herbenick’s (2009) sample (*M* = 28.37, *SD* = 3.36 compared to *M =* 26.48, *SD* = 4.70). It should be noted that Herbenick’s (2009) sample included both men and women. It is very likely that men would find the questions related to smell and taste of female genitals easier to answer than women (e.g., because of experience of cunnilingus) and indeed some of our female participants commented that they found these items difficult to answer. In comparison to the FGSIS, fewer studies have been published using the ATWGS measure; it is possible that the measure may not be as suitable for women as for men.

Notwithstanding the above limitations, the findings of this study provide insight for healthcare and medical professionals in understanding the factors that may influence women’s decision to obtain gynaecological exam and care and in guiding the development of health promotion programmes for cervical screening, targeted particularly at young women.

Although there were no differences in genital self-image and in attitudes toward female genitals between Asian and non-Asian women in this study, cultural differences may nonetheless be very relevant when considering barriers to pelvic examinations. Issues of health inequalities on ethnic minority groups should be taken into consideration when designing cervical screening programmes. Previous studies have found evidence of cultural issues as barriers to pelvic exam behaviors and found that attitudes and behaviors are amenable to change over time (Brotto et al., 2008; Woo et al., 2009). Future research could examine the predictive ability of genital self-image and acculturation on pelvic exam behaviors among a more diverse population in terms of different socioeconomic backgrounds, age group, sexual orientation, and educational backgrounds.

The importance of pelvic exams in cervical cancer and sexually transmitted infection prevention have been widely documented and have undeniably changed the morbidity and mortality associated with cervical related disease worldwide. However, despite the mass effort in promotion of cervical cancer screening, many women still do not attend for pelvic examinations. Although knowledge and motivation have previously been documented as mediators of preventative health behaviors, barriers such as fear of pelvic examinations should be considered when designing interventions or health education programmes targeted to young women.

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