

PSYCHOSOCIAL BURDEN OF WOMEN WITH ABNORMAL PAP SMEARS

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Abstract. This cross-sectional study aimed to describe the psychosocial burden of women with abnormal pap-smear results during the 3 months after recruitment into the study. Seventy-five women negative for intraepithelial lesions and 76 women with epithelial cell abnormalities were recruited. The two study groups did not differ in baseline demographic characteristics or gynecological history. However, the mean Health Impact Profile (HIP) scores were higher for the women negative for intraepithelial lesions [68.18 ± 14.22 and 57.74 ± 16.29 , respectively ($p < 0.001$)], who were mostly concerned about getting cancer, pain during the visit to the gynecologist, and that having sex with their partner may give them an infection ($p < 0.001$). There were no statistically significant differences in mean scores for Sheehan Disability Scale (SDS), Work Productivity and Activity Impairment Questionnaire (WPAI), Health Utilities Index (HUI), Health State Score (HSS), and Hospital Anxiety and Depression (HADS), between the two study groups. However, there was a significant difference in mean scores for HSS within the younger age group (18-28 years) [$(75.00 \pm 13.64, n = 19$ and $59.72 \pm 19.13, n = 18$, respectively)] ($p = 0.008$). The provision of information, counseling, and advice, support services and clinician consultation times, need strengthening, to help alleviate women's concerns about infection, and their worries, anxiety or depression, following an abnormal Pap result.

INTRODUCTION

Although cervical cancer is curable when detected early, it remains one of the leading causes of cancer deaths in women worldwide. Early detection is effective because the precursor lesions evolve slowly into invasive cancers, typically over a period

of more than 10 years. These precursor lesions [dysplasias or cervical intraepithelial neoplasias (CINS)], are detected using cervical cytological screening methods, such as the Pap test. Wherever a Pap screening program has been introduced, cervical cancer has been reduced significantly. Studies have detected human papillomavirus (HPV) in more than 90% of cancers worldwide; there are plausible biological mechanisms for cervical cancer (Walboomers *et al*, 1999). The magnitude of the association of risk between HPV and cervical cancer is greater than smoking and lung cancer. However, infection alone is not sufficient cause for cancer, and additional factors are required for neo-

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plasia. Sexual transmission is the main mechanism for acquiring genital HPV. Infection is usually transient and symptom-free. It is estimated that 80% of sexually active women have been exposed. Up to 70% of sexually active adults will become infected with HPV during their lifetimes (Kotloff *et al*, 1998; Deacon *et al*, 2000). Although HPV testing offers some advantages over conventional cervical screening (Solomon *et al*, 2001; Sasieni and Cuzick, 2002), potential problems may derive from its lack of specificity, so that women may sometimes test positive without clinically significant cytological abnormality. Early research suggested HPV testing might also cause psychosocial and psychological effects (McCaffery *et al*, 2006). Women with abnormal Pap tests often experience numerous psychosocial concerns about cancer and fertility, especially women referred for colposcopic examination (Lerman *et al*, 1991; Wardle *et al*, 1995; Rogstad, 2002).

MATERIALS AND METHODS

Sample size

Sample size was determined by the number of smear-negative subjects, based on previous research (Wardle *et al*, 1995), and this was increased by 15% to 150 with > 92% power (two-sided test with alpha 0.05).

Study method

The database or medical records at the Obstetrics and Gynecology Department of Ratchawithi Hospital were retrieved. Potential study participants, who fulfilled the study inclusion/exclusion criteria and had a recent abnormal Pap smear, were identified. A single study visit with each study participant was scheduled by a nurse for the same day as the Pap test, or a subsequent day. All eligible women who were between the ages of 18-45 years; had recently had an abnormal pap smear without definitive histology,

including inflammation and infection and/or conforming to the Bethesda Category-2001 category of squamous or glandular cell abnormality within the past 3 months; were in good general health; and provided signed informed consent were enrolled into the study. After the subjects self-completed the study questionnaires, the nurse reviewed the forms for completeness prior to the subjects leaving the clinic.

Study instruments and data collection

All study instrument (questionnaire) content used in the study, except those for demographic and medical characteristics, was validated from the literature and from previously conducted patient interviews (Jenkinson *et al*, 1994). Reliability for the instruments was assessed using Cronbach's alpha coefficient, which is a model of internal consistency. Cronbach's alpha coefficient was based on the average inter-item correlation, which should be ≥ 0.7 .

Demographics and medical characteristics

Participants reported age, educational level, marital status, household income (THB), Pap-smear result, gynecological history within the past 5 years, and general medical history for the past 30 days.

Health Impact Profile (HIP)

The questionnaire was modified from the HPV Impact Profile, which was developed by conducting a comprehensive and systematic literature review of HPV-related psychosocial effects (Kitchener *et al*, 2008). The questionnaire contained 29 items. The response for each item was a 0-10 point discretized analog scale, adapted from Sheehan *et al* (1996); the scale used visual-spatial, numeric, and verbal descriptive anchors to assess participants' responses. The score was transformed into 0-100 scale; higher scores indicated better status.

Ancillary study measurements

Sheehan Disability Scale (SDS). This 3-item

questionnaire examines qualitatively how diminished health status interferes with work-, family-, life-, and school-related activities. The measure was developed and validated by a previous study (Sheehan *et al*, 1996).

Work Productivity and Activity Impairment Questionnaire (WPAI). This test assesses the quantitative impact of health conditions on loss of time and impaired productivity for functional activities, such as work-for-pay, schoolwork, and work around house during the past 7 days. It specifically assesses the quantitative impact of work loss in terms of hours per week (hpw).

Health Utilities Index (HUI). This test is a self-report on participant status, which can be linked to health-related quality of life measures and used to assess multi-attribute generic health status during the past 4 weeks (Feeny *et al*, 1995).

Health State Score (HSS). This is a measure of general health and well-being, utilizing 5 items that measure the domains of mobility, self-care, usual activities, pain/discomfort and anxiety/depression (EuroQol Group, 1990; Brooks and EuroQol Group, 1996). Using a visual analog scale (VAS), participants are asked to select their current health status on a scale of 0-100, where "100" represents perfect health and "0" represents death.

Hospital Anxiety and Depression Scale (HADS). This test measures depression and anxiety using a 14-item self-administered instrument (Snaith, 2003). Responses are mapped onto 4 ranges (normal, mild, moderate, and severe), which are converted to scores of 1-4; higher scores indicate better status. It has been widely used to measure depression and anxiety in adults and is considered valid when used in community settings and primary-care medical practice (Bjelland *et al*, 2002).

Statistical analysis

Data were summarized, and qualitative

data presented as proportions (%). Comparisons were made using chi-squared test (two-tailed) or Fisher's exact test, as appropriate. The Student's *t*-test was used for comparing means of two groups and analysis of variance (ANOVA) for means of more than two groups, and further post hoc analysis. The level of statistical significance was set at alpha 0.05.

Ethical considerations

The study protocol was approved by the Ethics Review committees of the Faculty of Tropical Medicine, Mahidol University (Nos. MUTM 2007-024 and MUTM 2008-207), and Ratchawithi Hospital (No. 043/2550).

All authors signed documents to the effect that they had full access to all of the data in this study and took complete responsibility for the integrity of the data and the accuracy of the data analysis.

RESULTS

Participants were recruited from the Obstetrics and Gynecology Department of Ratchawithi Hospital, Bangkok, during May-December 2007. One hundred fifty-one participants were categorized by type of abnormality as negative for intraepithelial lesion and epithelial cell abnormality. Demographic data and medical history for all gynecological conditions within the prior 5 years, and for all other medical conditions for the prior 30 days, is shown in Table 1. Among the 27 participants (17.9%) who reported medical events, the majority (37.0%) were gynecological events (*eg*, chocolate cyst, endometriosis, ovarian cyst, abortion), followed by respiratory symptoms/signs (*eg*, allergic rhinitis, UTI, tonsillitis) (22.2%). There were no statistically significant differences in demographics or medical history between the two groups of study participants.

The first analyses examined HPV Health Impact profiles (HIP). From 29 items,

Table 1
Demographics and medical history.

Characteristic	Negative for intraepithelial lesion, <i>n</i> (%)	Epithelial cell abnormality, <i>n</i> (%)	<i>p</i> -value
Mean age in years (SD)	33.2 (6.7)	33.6 (6.7)	0.752 ^a
Educational achievement			
Lower than 9 th grade	28 (37.3)	30 (39.5)	0.787 ^b
Bachelor/graduate degree	19 (25.3)	21 (27.6)	0.749 ^b
Marital status			
Not married	15 (20.0)	11 (14.5)	0.368 ^b
Married	51 (68.0)	56 (73.7)	0.442 ^b
Separated/widowed/divorced	9 (12.0)	9 (11.8)	0.976 ^b
Gynecological condition within the past 5 years and all other medical conditions for the past 30 days	16 (21.3)	11 (14.5)	0.375 ^b

^aStudent's *t*-test; ^b χ^2 tests.

there was a statistically significant difference in mean scores between the two study groups (68.18 ± 14.22 , and 57.74 ± 16.29 , respectively), $p < 0.001$. Mean HIP scores, with 95% confidence interval, are shown in Fig 1. For the question "concern about getting cancer in the future", the mean scores for the two study groups were 53.60 ± 30.56 and 36.84 ± 31.97 , respectively, $p = 0.001$. The HIP score for having a "sexually attractive body" had the lowest score for both groups, at 36.80 ± 31.24 , and 32.37 ± 28.88 , respectively; the difference between the groups was not statistically significant ($p = 0.367$). Mean and standard deviation for each question were presented in Table 2. The internal reliability of the scale in this study sample was 0.89 (Cronbach's alpha coefficient).

The ancillary study measurements included the Sheehan Disability Scale (SDS), Work Productivity and Activity Impairment Questionnaire (WPAI), and Health Utilities Index (HUI). Analysis of each SDS item showed a statistically significant difference in mean scores for the item "work and social life" but not for "family life/home responsibilities" ($p = 0.027$, 0.047 and 0.574 , respec-

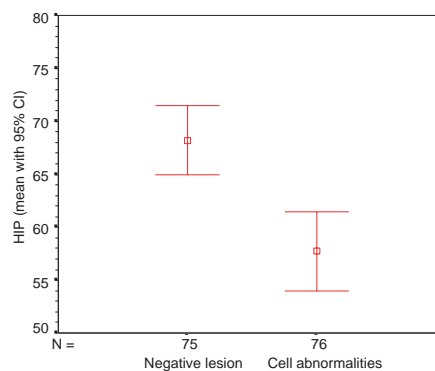


Fig 1—Mean HIP scores with 95% CI.

tively). However, when the total mean scores for the three items were considered, there was no statistically significant difference between the two groups ($p = 0.080$) (Fig 2). For WPAI (9 items) and HUI (18 items), there were no statistically significant differences in mean scores between the two groups ($p > 0.05$). To examine Health State Score (HSS), all participants were asked to select their current health status on a scale of 0-100; there was no statistically significant difference in mean scores for the two study groups (75.69 ± 18.49 , and 70.00 ± 10.01 , respectively, $p = 0.064$). However, when participants were categorized by

Table 2
Mean score and SD for HPV Health Impact profiles (HIP).

Question	Negative for intraepithelial lesion <i>n</i> = 75	Epithelial cell abnormalities <i>n</i> = 76	<i>p</i> -value ^a
1. When I think about my recent gynecology exam or test results, I feel good about myself.	60.80 ± 23.98	56.32 ± 25.02	0.263
2. When I think about my recent gynecology exam or test results, I feel anxious.	55.47 ± 27.82	43.82 ± 28.47	0.012
3. I feel my recent gynecology test results were unexpected.	58.27 ± 28.35	40.39 ± 30.48	<0.001
4. When I think about my recent gynecology exam or test results, I feel in control of my health.	74.80 ± 24.73	69.47 ± 20.97	0.155
5. When I think about my recent gynecology exam or test results, I feel depressed.	70.67 ± 29.19	55.26 ± 31.39	0.002
6. After my recent gynecology exam or test results, I feel I can concentrate as well as usual on everyday matters.	73.47 ± 23.22	66.97 ± 23.21	0.088
7. When I think about my recent gynecology exam or test results, I feel something is seriously wrong with me.	68.67 ± 28.35	52.37 ± 29.79	0.001
8. When I think about my recent gynecology exam or test results, I feel angry.	90.80 ± 19.08	80.66 ± 25.94	0.007
9. When I think about my recent gynecology exam or test results, I feel confident my partner will accept me.	83.85 ± 23.23 (<i>n</i> =65)	69.05 ± 29.34 (<i>i</i> =74)	0.001
10. When I think about my recent gynecology exam or test results, I feel my body is sexually attractive	36.80 ± 31.24	32.37 ± 28.88	0.367
11. When I think about my recent gynecology exam or test results, I feel ashamed.	81.60 ± 25.31	71.84 ± 31.44	0.037
12. I feel concerned about having genital warts.	75.47 ± 34.61	57.89 ± 37.61	0.003
13. I am worried there are no treatments to cure genital warts.	79.07 ± 28.95	71.58 ± 31.33	0.129
14. When I think about my recent gynecology exam or test results, I feel optimistic about my future gynecological health.	73.87 ± 25.41	66.32 ± 22.85	0.057
15. I am worried about having abnormal Pap test results.	63.33 ± 31.68	42.50 ± 29.13	<0.001
16. I am worried that there is no cure for what causes an abnormal Pap test.	68.40 ± 30.85	59.47 ± 31.95	0.083
17. I am worried about my fertility because of my recent gynecological health or test results.	73.73 ± 39.28	69.87 ± 35.65	0.527
18. I am concerned I will get cervical cancer in the future.	53.60 ± 30.56	36.84 ± 31.97	0.001
19. I am worried that there are no treatments to cure cervical cancer.	55.87 ± 33.54	57.63 ± 34.09	0.749
20. I am worried about having pain during future gynecologist visits.	69.73 ± 29.54	52.24 ± 32.36	0.001
21. After my recent gynecology exam or test results, I am worried that having sex with my partner may give him/her an infection.	58.46 ± 30.63 (<i>n</i> = 65)	48.38 ± 31.10 (<i>n</i> =74)	0.057

Table 2 (Continued).

Question	Negative for intraepithelial lesion <i>n</i> = 75	Epithelial cell abnormalities <i>n</i> = 76	<i>p</i> -value ^a
22. After my recent gynecology exam or test results, I am worried that having sex with my partner may give me an infection.	59.08 ± 29.62 (<i>n</i> = 65)	40.41 ± 32.33 (<i>n</i> = 74)	0.001
23. I felt disgusted by my recent gynecology exam or test results.	84.00 ± 2.30	74.34 ± 30.35	0.027
24. After my recent gynecology exam or test results, I am having less sex.	67.20 ± 30.29	59.61 ± 32.39	0.139
25. After my recent gynecological exam or test results, I feel satisfied with my sex life.	47.20 ± 27.88	43.68 ± 26.48	0.428
26. After my recent gynecological exam or test results, the quality of my sleep has decreased.	72.53 ± 26.41	62.11 ± 30.12	0.025
27. I felt relaxed after my recent gynecological exam.	74.53 ± 23.32	55.53 ± 25.63	<0.001
28. I felt my recent gynecology procedures were embarrassing.	71.60 ± 30.27	61.32 ± 31.13	0.041
29. I felt the medical procedures at my recent gynecological exam were uncomfortable.	75.60 ± 27.27	76.32 ± 24.86	0.086

^aStudent's *t*-testTable 3
Mean score and SD for Hospital Anxiety and Depression Scale (HADS)

Question	Negative for intraepithelial lesion <i>n</i> = 75	Epithelial cell abnormalities <i>n</i> = 76	<i>p</i> -value ^a
1. I feel tense or 'wound up'.	2.73 ± 0.723	2.80 ± 0.654	0.537
2. I still enjoy the things I used to enjoy.	3.07 ± 0.81	3.13 ± 0.77	0.615
3. I get a sort of frightened feeling as if something awful is about to happen.	2.55 ± 0.76	2.30 ± 0.71	0.043
4. I can laugh and see the funny side of things.	3.55 ± 0.62	3.45 ± 0.55	0.301
5. Worrying thoughts go through my mind.	2.79 ± 0.79	2.78 ± 0.72	0.933
6. I feel cheerful.	2.99 ± 0.71	3.04 ± 0.68	0.641
7. I can sit at ease and feel relaxed.	2.85 ± 0.75	2.88 ± 0.71	0.812
8. I feel as if I am slowed down.	3.09 ± 0.64	3.09 ± 0.62	0.990
9. I get a sort of frightened feeling like 'butterflies' in the stomach.	3.27 ± 0.66	3.33 ± 0.60	0.546
10. I have lost interest in my appearance.	3.32 ± 0.86	3.38 ± 0.86	0.661
11. I feel restless as if I have to be on the move.	3.27 ± 0.64	3.20 ± 0.61	0.499
12. I look forward with enjoyment to things.	2.96 ± 1.11	3.24 ± 0.94	0.099
13. I get sudden feeling of panic.	3.05 ± 0.77	2.92 ± 0.61	0.242
14. I can enjoy a good book or radio or television program.	3.68 ± 0.55	3.59 ± 0.64	0.365

^aStudent's *t*-test

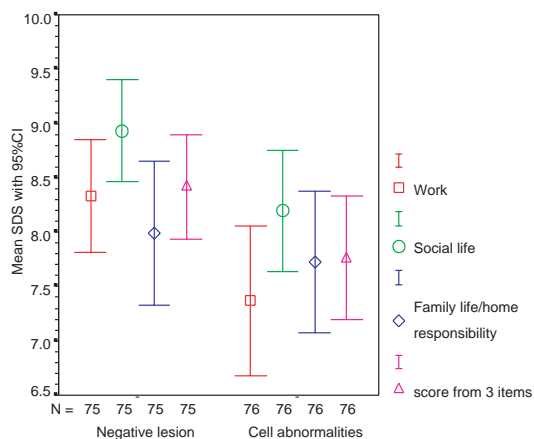


Fig 2—Mean SDS scores with 95% CI.

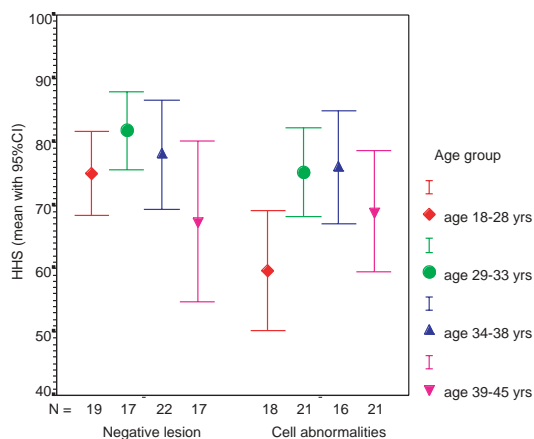
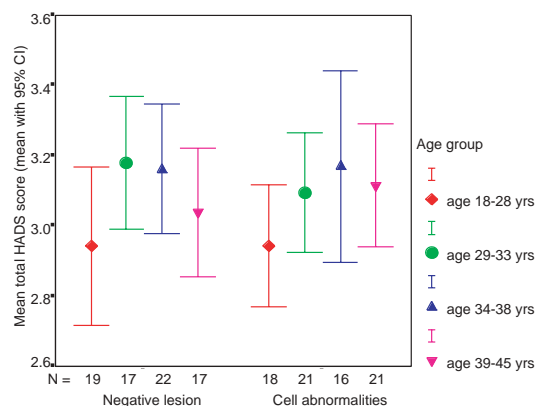


Fig 3—Mean HHS scores with 95% CI, by age group.

age group (18-28, 29-33, 34-38, and 39-45 years), there was a statistically significant difference in mean HSS scores between the two study groups for the age group 18-28 years ($p = 0.008$). The mean HSS scores by age group, with 95% confidence interval, are shown in Fig 3.

The mean total scores for the Hospital Anxiety and Depression Scale (HADS) showed no statistically significant difference between the two study groups (3.08 ± 0.41 , and 3.08 ± 0.40 , respectively, $p = 0.976$). The



Negative lesion Age 18-28 yrs vs 29-33 yrs vs 34-38 yrs vs 39-45 yrs
 $F(3,71) 1.416 (p = 0.245)$
 Cell abnormality Age 18-28 yrs vs 29-33 yrs vs 34-38 yrs vs 39-45 yrs
 $F(3,72) 0.999 (p = 0.398)$
 Age 18-28 years Negative lesion vs cell abnormality
 $F(1,35) 0.000 (p = 0.995)$
 Age 29-33 years Negative lesion vs cell abnormality
 $F(1,36) 0.500 (p = 0.484)$
 Age 34-38 years Negative lesion vs cell abnormality
 $F(1,36) 0.002 (p = 0.962)$
 Age 39-45 years Negative lesion vs cell abnormality
 $F(1,36) 0.407 (p = 0.528)$

Fig 4—Mean total HADS scores with 95% CI, by age group.

mean and SD score for each question are presented in Table 3; the lowest score in the both study groups was shown for the question, “I get a sort of frightened feeling as if something awful is about to happen” had mean scores of 2.55 ± 0.76 , and 2.30 ± 0.71 , respectively ($p = 0.043$).

ANOVA was used to analyze the mean total HADS scores, by study group and by age group. The total HADS scores with 95% CI by age group, and the F -test with p -value, also showed no statistically significant different means (Fig 4). However, the younger age group (18-23 years) scored lowest for both study groups (2.94 ± 0.47 , and 2.94 ± 0.35 , respectively). The internal reliability of the scale in this study sample was 0.83 (Cronbach’s alpha coefficient).

DISCUSSION

Participants in the “abnormal epithelial cells” group were more anxious, surprised, and depressed with their pap-smear results than participants in the “negative for lesion” group. The major concern among the participants was getting cancer in the future and having pain during future gynecologist visits, as shown by the difference in mean scores for the HPV Impact Profile (HIP) between the “negative for lesion” and “abnormal epithelial cells” groups ($p = 0.001$). This result was consistent with previous research (McCaffery *et al*, 2004). Mean scores for “confident about acceptance from their partners” showed statistically significant difference between both groups ($p = 0.001$), with the lower score in the abnormal epithelial cells group. In this study group, the participants were very “concerned about their sexually attractive body,” the score for which was the lowest in both study groups, but the difference in mean scores was not statistically significant ($p = 0.367$). There was a statistically significant difference in the mean score for “concern about getting cancer” between the two study groups, with the most concern in the abnormal epithelial cells group ($p = 0.001$). The lowest score in both groups, but not different in mean scores, was for “concern about being sexually attractive.” This may be because they were concerned about their social, working, and daily lives, for which they need to feel attractive, but for “concern about cancer in future” was mainly in the abnormal epithelial cells group. Overall, the mean total HIP score for the group with abnormal epithelial cells was significantly lower than the negative-lesion group ($p < 0.001$). There was no statistically significant difference in mean Health State Scores (HSS). However, when participants were categorized by age group, those aged 18-28 years had the lowest HSS score. There was a statistically significant difference in

mean scores for HSS only for the age group 18-28 years ($p = 0.008$). The Total Hospital Anxiety and Depression Scale (HADS) scores were similar in both groups ($p = 0.976$). This may be because the participants were asymptomatic patients or in early stage of cervical cancer. However, participants in both groups were “concerned something awful might happen,” which received the lowest score items in both groups, similar to a study of patients with breast cancer (Lueboonthavatchai, 2007), which possibly means that they might feel a loss of confidence and a loss of attractiveness. The younger age group had the lowest score. A study of college students (Ramirez *et al*, 1997) also found that participants expected to experience anger, fear, anxiety, regret, confusion, and feeling dirty. Abnormal cytology results from cervical screening are commonly associated with anxiety, and this may be alleviated by simple information interventions (Wilkinson *et al*, 1990). Participants with cell abnormalities, in particular the younger age group, may need more education and counseling and/or advice to alleviate their concerns about infection. Although this study did not test HPV because of the high cost involved, when HPV testing becomes more accessible in the near future, the psychosocial impact and clinical benefits need to be carefully evaluated when deciding whether to incorporate HPV testing into cervical screening. The provision of information and support services, and appropriate clinical consultation times, should be considered for women with abnormal Pap-test results.

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