WOMEN'S ANXIETY AND PERCEPTIONS OF PAP TESTS IN NORTH-EASTERN ROMANIA

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WOMEN'S ANXIETY AND PERCEPTIONS OF PAP TESTS IN NORTH-EASTERN ROMANIA (Abstract): Cervical cancer is still a substantial global public health issue among women. In the prevention and early diagnosis, cervical cancer screening plays a crucial role (1). However, acceptance of and participation in this screening are influenced by various factors. Woman's psychological status, including stress, anxiety, depression, or individual perception of health, can influence the decision to participate in cervical cancer screening. The current study **aimed** to investigate the psychological impact of Papanicolaou (Pap) testing in women in the North-eastern Romania. **Materials and methods:** This study was conducted using a questionnaire specifically developed for this study, which included structured questions aimed to assess various aspects of the psychological impact of cervical cancer screening. The statistical analysis for this study was performed using *IBM SPSS Statistics* version 26. **Results:** The study indicated a significant positive association between the perception that the Pap test was painful and anxiety related to unfavorable results and fertility concerns fertility. Younger women tend to have their Pap test more often than older women. Women with previous negative Pap test results tend to have lower levels of anxiety related to unfavorable results compared to women previously experiencing positive Pap test results. The results indicated that the regression model (i.e., age, perceptions about the Pap test - cost, pain, and embarrassment) did not significantly predict the anxiety related to unfavorable results. **Conclusions**: Our study highlights important psychosocial aspects related to cervical cancer screening and provides a foundation for improving health promotion services and risk awareness programs. **Keywords:** ANXIETY, DEPRESSION, PAP TEST, CERVICAL CANCER, CERVICAL SCREENING.

INTRODUCTION

Cervical cancer is a significant global public health problem, particularly affecting women. In the area of prevention and early diagnosis, cervical cancer screening plays a crucial role (1). In developed countries, routine screening schedules with Pap tests and/or HPV tests have led to a drastic decrease in the incidence and mortality of cervical cancer over the past five decades. In Romania, in 2020 alone, 3380 women were diagnosed with cervical cancer and 1805 died from this disease, while the 5-year prevalence was 9808 cases, according to Globocan data (2). Romania has the lowest rate of cervical cancer screening attendance

in the EU, influenced by specific social connotations. Thus, in 2019, less than 30% of Romanian women reported having had a Pap test in the last three years, which is half the European average (3). However, acceptance and participation in this screening are influenced by a variety of factors, which can be grouped into three main categories: awareness of the disease and the need for screening, structural barriers, and psychosocial beliefs about the disease and screening. Despite advances in the medical field, socio-psychological factors, particularly the psychological status of women, can significantly impact the effectiveness and participation in such screening programs. A woman's psychological status, including stress, anxiety, depression, or self-perceived health, can influence her decision to participate in cervical cancer screening. Concerns about pain, discomfort, or embarrassment associated with the procedure, or negative past experiences can discourage participation in the screening (4-7).

Discomfort with the attitude of healthcare workers, fear of being labeled, fear of being diagnosed with cancer and the implications of this diagnosis, fear of stigma, embarrassment, unacceptable touch, and negative experiences with the healthcare system can be significant psychological barriers to screening participation (8). Also, studies have highlighted that abnormal Pap smear findings evoke negative emotions ranging from anxiety to fear of developing or even having cancer (9-12).

The current study aimed at investigating the psychological impact of undergoing a Papanicolaou (Pap) test experienced by women in North-eastern Romania. This research was motivated by the need to understand how various factors influence women's experiences and perceptions related to Pap test, a critical screening tool for cervical cancer. Specifically, this study examined the interplay between age, perceptions of the Pap test (regarding cost, pain, and embarrassment), timing of the last test (within the last 2 years, between 2 and 5 years, more than 5 years ago), anxiety related to potentially unfavorable results, and fertility concerns.

OBJECTIVE AND HYPOTHESIS

The main objective of the present study was to comprehensively evaluate the psychological impact of Pap testing in women, focusing on the relationship between age, perceptions of the test (cost, pain, and embarrassment), timing of the last test, anxiety related to potentially unfavorable results, and concerns about fertility. Therefore, the current study was conducted to analyze the following hypotheses:

H1. There is a significant positive relationship between age, last test, result (positive, negative), perceptions of the test (cost, pain, and embarrassment), and anxiety related to potentially unfavorable results.

H2. There is a significant positive relationship between age, last test, result (positive, negative), perceptions of the test (cost, pain, and embarrassment), and concerns about fertility.

H3. Significant differences exist between age groups regarding the timing of the last Papanicolaou test.

H4. Women who received a positive result from a previous Pap test will experience a higher level of anxiety related to potentially unfavorable results compared to those receiving a negative result.

H5. There are significant differences in fertility-related concerns between women who received a negative result and women who received a positive result from a previous Pap test.

H6. Age and perceptions of the Pap test

(cost, pain, and embarrassment) significantly predict anxiety related to potentially unfavorable results.

H7. Age and perceptions of the Pap test (cost, pain, and embarrassment) significantly predict concerns about fertility.

MATERIALS AND METHODS

Participants and procedure

The study was conducted using a questionnaire specifically developed for this study, which included structured questions to assess various aspects of the psychological impact of cervical cancer screening. The target population were women (N = 308) aged 18-70 years old, 68.8% aged 25-45 and 27.3% aged 45-65 years old, who either participated (90.3%) or did not participate (9.7%) in cervical cancer screening programs, the selection being random. Moreover, 88.6% of participants who had previously undergone a Pap test received a negative result, while 4.9% received a positive result.

Recruitment into the study involved inviting eligible women to participate through online invitations, providing them with information about the purpose of the study, and obtaining their consent to participate. Data were collected using the Google Forms platform.

Measures

To measure the research variables, specific questions tailored to the topics of interest for the current research were used.

Anxiety related to unfavorable result

To measure anxiety related to potentially unfavorable results, we asked the participants to rate on a 4-point Likert scale, from 1 (not at all) to 4 (very much), how anxious they felt about the possibility of an unfavorable result.

Fertility concerns

To measure concerns about fertility, we used the same approach as we did to measure anxiety related to unfavorable results.

Demographic data

We asked participants to indicate their age group (18-25, 25-45, 45-65, and over 65), area of residence (rural or urban), educational level, and relationship status.

Statistical Analysis

For this study, the statistical analysis was conducted using *IBM SPSS Statistics* version 26. Our primary goal was to explore the psychological impact of undergoing a Papanicolaou (Pap) test on women, considering various influencing factors. The analyses were focused on the following variables: age, perceptions of the Pap test (regarding cost, pain, and embarrassment), timing of the last test (within the last 2 years, between 2 and 5 years, more than 5 years ago), anxiety related to potentially unfavorable results, and concerns about fertility.

First, descriptive statistics were used to summarize the demographic characteristics of the sample and the distribution of responses for each variable. Moreover, Spearman's correlation coefficients were computed to examine the relationship between age and perceptions of the Pap test (cost, pain, and embarrassment). To compare the psychological impact across different groups, we used One-Way ANOVA and Independent Samples t-Tests to analyze the differences between age groups and last Pap test (within the last 2 years, between 2 and 5 years, more than 5 years ago), and to compare differences in anxiety level and fertility concerns based on the Pap test result (in those who underwent a Pap test before). However, multiple regression analyses were performed to assess the predictive power of age, perceptions of the Pap test (regarding cost, pain, and embarrassment), and timing of the last test (within the last 2 years, between 2 and 5 years, more than 5 years ago)

on anxiety related to unfavorable results and fertility concerns.

RESULTS

The Spearman correlation analysis indicated a significant positive association between the perception that the Pap test is painful and anxiety related to unfavorable results (r = .196, p = .004). Thus, the higher the perception that the Pap test as being painful, the higher the anxiety related to unfavorable results. Moreover, the results indicated a significant positive relationship between the perception that the Pap test is being painful and fertility concerns (r = .136, p = .038). Thus, the higher the perception that the Pap test is painful, the higher the concern about fertility. Therefore, women who experience Pap smear pain had fertility concerns (tab. I).

TABLE I.

Spearman correlation analysis

	1	2	3	4	5	6	7	8
1. Age	-							
2. Last test	.239**	-						
3. Result	-.116*	-.036	-					
4. Cost	-.166**	-.057	-.018	-				
5. Pain	-.016	.117	-.012	.231**	-			
6. Embarrassment	-.014	.063	.033	.154*	.409**	-		
7. Anxiety	-.020	-.045	.117	.120	.196**	.068	-	
8. Fertility concerns	-.039	-.049	.104	.012	.136*	.054	.507**	-

Note *p< .05; **p<.01

One-Way ANOVA compared the means and revealed significant differences between age groups and last Pap test (within the last 2 years, between 2 and 5 years, more than 5 years ago) (F (3; 282) = 6.63, p = .000). Specifically, significant differences were found between the 25-45 age group (M = 1.34, SD = .58) and 45-65 age group (M = 1.69, SD = .77) regarding the last Pap test (within the last 2 years, between 2 and 5 years, more than 5 years ago). Participants in the 45-64 age group tend to have had their last Pap test longer ago compared to those in the 25-45 age group. Thus, younger women tend to have their Pap test more often than older women (tab. II).

TABLE II.

One-way ANOVA analysis

Last Pap test	Sum of Squares	df	Mean Square	F	p
Between Groups	8.19	3	2.73	6.63	.000
Within Groups	116.04	282	.412		
Total	124.23	285			

The Independent t-Test results indicated significant differences in anxiety related to unfavorable result (t (251) = -2.25, p = .025) between the participants who had previously

undergone a Pap test and received a negative result (M = 1.93, SD = .80) and those who received a positive result (M = 2.45, SD = 1.05), with higher levels of anxiety in those who received a positive result. Thus, women who previously received negative results from the Pap test tend to have lower levels of anxiety related to unfavorable results compared to women who previously received positive results from the Pap test (tab. III).

TABLE III.

Independent t-test for anxiety

Anxiety	**N**	**M**	**SD**	**t-test**	**p**
Negative result	240	1.93	.80	-2.25	.025
Positive result	13	2.46	1.05		

TABLE IV.

Independent t-test for fertility concerns

Fertility concerns	**N**	**M**	**SD**	**t-test**	**p**
Negative result	240	2.63	1.26	-1.57	.117
Positive result	15	3.20	1.26		

Regression results indicated that the regression model (i.e. age, perceptions of the Pap test - cost, pain, and embarrassment) did not significantly predict anxiety related to unfavorable results ($F (4, 205) = 1.55$, $p > .05$). Moreover, no independent variable was a significant predictor.

Also, regression results indicated that the regression model (i.e., age, perceptions of the Pap test - cost, pain, and embarrassment) did not significantly predict the fertility concerns ($F (4, 212) = .97$, $p > .05$). Moreover, no independent variable was a significant predictor.

Thus, the regression model, which relates age and perceptions of the Pap test (cost, pain, embarrassment) does not significantly predict anxiety related to an unfavorable result.

Finally, regression results indicated that the regression model (i.e., age, perceptions of the Pap test - cost, pain, and embarrassment) did not significantly predict fertility concerns ($F (4, 212) = .97$, $p > .05$). Moreover, no independent variable was a significant predictor. Thus, the regression model, which relates age and perceptions of the Pap test (cost, pain, embarrassment), does not significantly predict fertility concerns (tab. V).

TABLE V.

Regression - anxiety related to unfavorable results and concerns about fertility.

	Anxiety			**Fertility concerns**		
Variables	*B*	*SE (B)*	*β*	*B*	*SE (B)*	*β*
Age	.120	.125	.066	-.180	.189	-.066
Cost	.035	.069	.036	-.062	.106	-.041
Pain	.176	.090	.150	.226	.139	.124
Embarrassment	.000	.083	.000	-.015	.128	-.009
R^2	.029			.018		

Note: *p < .05; **p < .001

Hypothesis testing - brief results

H1. There is a significant positive relationship between age, last test, result (positive, negative), perceptions of the test (cost, pain, and embarrassment), and anxiety related to potentially unfavorable results.

Results indicated a significant positive association between the perception that the Pap test is painful and anxiety related to unfavorable results ($r = .196$, $p = .004$).

H2. There is a significant positive relationship between age, last test, result (positive, negative), perceptions of the test (cost, pain, and embarrassment), and fertility concerns.

Results indicated a significant positive relationship between the perception that the Pap test is painful and fertility concerns ($r = .136$, $p = .038$).

H3. Significant differences exist between age groups regarding the timing of the last Papanicolaou test.

There are significant differences between age groups and last Pap test (within the last 2 years, between 2 and 5 years, over 5 years) ($F (3; 282) = 6.63$, $p = .000$).

H4. Women who received a positive result from a previous Pap test will have higher anxiety related to potentially unfavorable results compared to those who received a negative result.

Results indicated significant differences ($t (251) = -2.25$, $p = .025$) between participants who had previously undergone a Pap test and received a negative result ($M = 1.93$, $SD = .80$) and participants who received a positive result ($M = 2.45$, $SD = 1.05$) regarding anxiety related to unfavorable result, with the participants who received a positive result experiencing higher anxiety compared to those who received a negative result.

H5. There are significant differences in fertility concerns between women who received a negative result and women who received a positive result from a previous Pap test.

Results indicated that there are no significant differences in fertility concerns ($t (283) = -1.57$, $p = .11$).

H6. Age and perceptions of the Pap test (cost, pain, and embarrassment) will significantly predict anxiety related to potentially unfavorable results.

Results indicated that the regression model (i.e., age, perceptions of the Pap test - cost, pain, and embarrassment) did not significantly predict anxiety related to unfavorable results ($F (4, 205) = 1.55$, $p > .05$).

H7. Age and perceptions of the Pap test (cost, pain, and embarrassment) will significantly predict fertility concerns.

Results indicated that the regression model (i.e., age, perceptions of the Pap test - cost, pain, and embarrassment) did not significantly predict fertility concerns ($F (4, 212) = .97$, $p > .05$).

DISCUSSION

This research was conducted to understand how various factors impact women's experiences and perceptions regarding Pap testing, a crucial screening tool for cervical cancer. We analyzed a sample of 307 women, exploring their distribution according to various factors. Most participants (68.95%) were in the 25-45 years age group, corresponding to the socially active population and the most likely to develop this condition. The results of previous studies show that psychological response to Pap test is a significant barrier to screening for women of all ages (11, 13), including those who had never undergone screening (14, 15). Results showed that older women more often face emotional barriers than practical barriers, while younger women more often advocate practical barriers (16). Our study

supports this hypothesis: participants in the 45-64 years age group tend to have had their last Pap test after a longer time interval compared to those in the 25-45 age group. Thus, younger women tend to have their Pap test more often than older women. Similar studies consider the same results to be influenced by public health campaigns and guideline recommendations (17). Regarding the lower rate of Pap tests in the older women group, several studies have identified a trend where older women tend to have Pap tests less frequently than younger women (18, 19).

We found significant variations in the time interval since last test. A significant percentage of the participants performed the regular test over the last 2 years, indicating continued attention to reproductive health. This group can benefit from early detection and regular health monitoring. At the same time, 24.6% of these women participated in the screening 2-5 years ago, and this may indicate a possible concern about the frequency of the tests or reflect individual circumstances such as limited access to medical services. It is also important to pay attention to the 9.5% of the participants who had the test more than 5 years ago. This group may be at increased risk, and this finding may serve as a basis for developing specific awareness and intervention strategies to stimulate participation in regular screening. A personalized and educational approach can be crucial to improving participation in screening and reducing the risk of reproductive health complications among participants.

Regarding the association between the perception that the Pap test is painful, and anxiety is related to unfavorable results, the higher the perception that the Pap test is painful, the higher the anxiety related to unfavorable results. Thus, the higher the perception that the Pap test is painful, the higher the fertility concern. Therefore, women who felt pain when they did the Pap test had fertility concerns. An explanation for this result can be that when women experience pain during the Pap test, their anxiety about potential abnormal findings (e.g. cervical cancer) increases, leading to fears about subsequent treatments that could affect their reproductive health.

Therefore, women who previously had negative Pap test results tend to have lower levels of anxiety related to unfavorable results compared to women who previously had positive Pap test results. An explanation can be that women with previous negative results may perceive themselves at a lower risk for cervical abnormalities, and this fact may contribute to a low level of anxiety while those who have previously received positive results may consider themselves likely to have unfavorable outcomes. This heightened anxiety among women with previous positive results could be due to the psychological impact of past experiences, highlighting the need for psychological support and counseling in such cases.

Our findings are consistent with previous studies showing that a positive HPV result in combination with abnormal cytology is associated with increased anxiety and stress (20-23). As reported in literature, women's experiences during a Pap test are diverse. Some women experience embarrassment, anxiety, intimidation, and fear. In particular, fear is related to the belief that knowledge of a negative diagnosis can accelerate the course of cancer (4-7). Frederiksen *et al.* have published a very detailed review (24), which summarized data from 16 studies examining psychological

out-comes in women with histologically diagnosed or treated cervical intraepithelial neoplasia or cervical cancer. One of the key findings was that the psychological outcome of women with cervical intraepithelial neoplasia was similar to those of women with abnormal cytology but not necessarily needing treatment. They interpreted this finding as a consequence of women's uncertainty about their disease status. Frederiksen *et al.* also saw that women considered a cervical intraepithelial neoplasia diagnosis to be as bad as that of cervical cancer (25).

Another study from 2020 examining short-term anxiety and distress in women receiving different results following routine human papillomavirus (HPV) primary testing at cervical screening found evidence that clinically significant levels of anxiety may be more common in women who do not understand their result or received a positive one (26, 27).

When comparing participants who had a previous Pap test and received a negative result, there were no significant differences in fertility concerns. This finding implies that factors other than test results, possibly including personal beliefs and broader reproductive health education, might influence fertility concerns.

Other variables such as age, cost, pain, and embarrassment were not individually associated with increased anxiety from a negative result or fear of infertility. This indicates that none of these variables significantly contribute to anxiety or fertility concerns when considered separately. Models including age and perceptions of the Pap test (cost, pain, embarrassment) did not significantly predict anxiety related to unfavorable results or fertility concerns. Thus, the model, which includes age and perceptions of the Pap test (cost, pain, embarrassment), does not significantly predict anxiety related to unfavorable results.

Finally, the results indicated that the model age and perceptions of the Pap test (cost, pain, and embarrassment) did not significantly predict fertility concerns. This suggests that other variables or factors not considered might play a more significant role in these aspects. All these variables can collectively generate anxiety in the context of inadequate screening or absence of appropriate informative programs. The lack of accurate information and education regarding the Pap test can amplify fears related to cost, pain, embarrassment, and negative results. In this respect, informative programs that clearly explain to the population the role of this screening, how results are interpreted, and the available treatment options are essential.

Education and awareness can reduce anxiety and fertility concerns. Clear and accessible information can help demystify the Pap test and reduce the associated shame and fears. This can lead to better acceptance and participation in the screening, thus reducing overall anxiety related to the process and its results. Studies have shown that women who had never undergone the screening are more likely to report shame and anxiety as barriers, while those who underwent the screening are more likely to quote lack of time as a barrier. Worry is a key barrier to participation in the screening among women who had largely not undergone prior screening (14). The lack of adequate knowledge is recognized as an important barrier and a significant impediment (28, 29). Lack of knowledge of the disease process or the benefits of screening not only prevents women from initiating the decision-making

process related to participation in the screening (27) but could also generate fear of the disease or screening procedure

CONCLUSIONS

In conclusion, our study highlights important psychosocial aspects of cervical cancer screening and provides a foundation for improving health promotion services and risk awareness programs. Anxiety has been shown to be a decisive factor associated with the fear of a negative result or potential fertility issues. Therefore, the non-participation in the screening is not driven by pain, embarrassment, or costs but is fundamentally rooted in the fear of a possible unfavorable result. Although individual variables such as age, cost, pain, and embarrassment do not significantly predict anxiety or fertility concerns and are undoubtly associated with a positive test result, adequate screening and well-structured informative programs are essential to reduce anxiety and improve Pap test acceptability.

The practical implications of this research could enhance the effectiveness of screening and reduce the negative psychosocial impact on patients. Psychosocial barriers to screening may most significantly interfere with initial and timely screenings; specifically, directly addressing these barriers can encourage women to undergo screening for the first time or in a timely manner, leading to early diagnosis of this condition before it progresses to cancer.

CONFLICT OF INTEREST AND FUNDING

The authors declare that there is no conflict of interest, and they received no specific funding regarding this scientific research.

REFERENCES

1. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin* 2018; 68(6): 394-424.
2. World Health Organization International Agency for Research on Cancer (IARC). *GLOBOCAN 2021: estimated cancer incidence, mortality and prevalence worldwide in 2020*.
3. Raportul de garda (2023, 26 februarie) *Profilul României privind cancerul 2023: cancerul de col uterin și prevenirea infecțiilor HPV* https://raportuldegarda.ro/profil-romania-cancer-2023-col-uterin-infectie-hpv.
4. Peretto M, Drehmer LBR, Bello HMR. On˜ao comparecimento ao exame preventivo do cˆancer de colo uterino: raz˜oes declaradas e sentimentos envolvidos, Cogitare Enferm 2012; 17.
5. do Nascimento RG, A. Araújo, Falta de periodicidade na realizaç˜ao do exame citopatol´ogico do colo uterino: motivaç˜oes das mulheres, *REME Rev. Min. Enferm* 2014; 557-564.
6. Aguilar RP, D.A. Soares, Barreiras `a realizaç˜ao do exame Papanicolau: perspectivas de usu´arias e profissionais da Estrat´egia de Saúde da Família da cidade de Vit´oria da Conquista-BA, *Physis* 2015; 25: 359-379.
7. Oliveira PSD, Cardoso de Miranda SV, Sanches GLG, Barbosa HA. Conociendo la fidelidad de las mujeres al examen de c´ancer de cuello de útero, Cultura de los cuidados: *Revista de Enfermería y Humanidades* 2018; 22(52): 178-188.
8. Abah AU, Omokhapue A, Adewole A, Usifoh N, Iyanuoluwa OA. Environmental and psychosocial predictors of cervical cancer screening among women in Gwagwalada Area Council, Abuja, North Central, Nigeria. *Afr J Reprod Health* 2023; 27(7): 32-42.

9. Rask M, Swahnberg K, Lindell G, Oscarsson M. Women's experiences of abnormal Pap smear results-a qualitative study. *Sex Reprod Healthcare* 2017; 12: 3-8.
10. Rask M, Oscarsson M, Lindell G, Swahnberg K. Women with abnormal Pap smear result: a qualitative study of Swedish healthcare professionals' experiences. *Eur J Cancer Care (Engl)* 2016; 25(6): 980-991.
11. Oscarsson MG. Psychological adjustment of women in cervical cancer screening. *Curr Women Health Revi* 2011; 7(4): 353-357.
12. Thangarajah F, Einzmann T, Bergauer F, *et al*. Cervical screening program and the psychological impact of an abnormal Pap smear: a self-assessment questionnaire study of 590 patients. *Arch Gynecol Obstet* 2016; 293(2): 391-398.
13. Natalie Armstrong, Veronica James, Mary Dixon-Woods, The role of primary care professionals in women's experiences of cervical cancer screening: a qualitative study. *Family Practice* 2012; 29(4): 462-466.
14. Al-Naggar RA, Low WY, Isa ZM. Knowledge and barriers towards cervical cancer screening among young women in Malaysia. *Asian Pac J Cancer Prev* 2010; 11(4): 867-873.
15. Wong LP. Wong YL, Low WY, Khoo EM, Shuib R. Cervical cancer screening attitudes and beliefs of Malaysian women who have never had a Pap smear: a qualitative study. *Int J Behav Med* 2008; 15 (4): 289-292.
16. Waller J, Bartoszek M, Marlow L, Wardle J. Barriers to cervical cancer screening attendance in England: a population-based survey. *J Med Screen* 2009; 16(4): 199-204.
17. Saraiya M, King JL, Thompson T, Watson M. Cervical Cancer Screening Among Women Aged 18-30 Years - United States, 2000-2010 JAMA 2013; 51: 1038-1042.
18. Lee EE, Eun Y, Lee SY, Nandy K. Age-related differences in health beliefs regarding cervical cancer screening among Korean American women. Journal of Transcultural Nursing 2012; 23(3): 237-245.
19. Marlow LA V, Ryan M, Waller J. Increasing the perceived relevance of cervical screening in older women who do not plan to attend screening. *Sexually Transmitted Infections* 2020; 96(1): 20-25.
20. Drolet M, Brisson M, Maunsell E, *et al*. The psychosocial impact of an abnormal cervical smear result. *Psychooncology* 2012; 21: 1071-1081.
21. Kitchener HC, Fletcher I, Roberts C, *et al*. The psychosocial impact of human papillomavirus testing in primary cervical screening-a study within a randomized trial. *Int J Gynecol Cancer* 2008; 18: 743-748.
22. Maissi E, Marteau TM, Hankins M, *et al*. Psychological impact of human papillomavirus testing in women with borderline or mildly dyskaryotic cervical smear test results: cross sectional questionnaire study. *BMJ* 2004; 328: 1293.
23. McCaffery K, Waller J, Forrest S, *et al*. Testing positive for human papillomavirus in routine cervical screening: examination of psychosocial impact. *BJOG* 2004; 111: 1437-1443.
24. Frederiksen ME, Njor S, Lynge E, Rebolj M. Psychological effects of diagnosis and treatment of cervical intraepithelial neoplasia: a systematic review. *Sex Transm Infect* 2015; 91(4): 248-256.
25. Jentschke M, Lehmann R, Drews N, Hansel A, Schmitz M, Hillemanns P. Psychological distress in cervical cancer screening: results from a German online survey. *Arch Gynecol Obstet* 2020; 302(3): 699-705.
26. McBride E, Marlow AV, Forster AS, *et al.* Anxiety and distress following receipt of results from routine HPV primary testing in cervical screening: The psychological impact of primary screening (PIPS) study. *Int J Cancer* 2020; 146(8): 2113-2121.
27. Lyimo FS, Beran TN. Demographic, knowledge, attitudinal, and accessibility factors associated with uptake of cervical cancer screening among women in a rural district of Tanzania: three public policy implications. *BMC Public Health* 2012; 12: 22.
28. Aswathy S, Quereshi MA, Kurian B, *et al*. Cervical cancer screening: Current knowledge and practice among women in a rural population of Kerala, India. *Indian J Med Res* 2012; 136: 205.
29. Dahiya N, Aggarwal K, Singh MC, *et al*. Knowledge, attitude, and practice regarding the screening of cervical cancer among women in New Delhi, India. *Ci Ji Yi Xue Za Zhi* 2019; 31: 240.