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Developing and Psychometric Testing of Cervical Cancer Screening Behavior Scale (CCSBS)

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Abstract

Objective: Given the importance of screening as one of the health behaviors in cervical cancer, this study aims to develop and evaluate the psychometric characteristics of the Cervical Cancer Screening Behavior Scale (CCSBS).

Method: In this cross-sectional study, 376 women referred to Javaheri Health Center during the study period were selected through convenience sampling. Then, the scale was developed, and its content and face validities were examined. To ensure divergent and convergent validity, Depression Anxiety Stress Scale (DASS-21) was used. The internal consistency method (Cronbach's alpha) was used to determine the reliability of the questionnaire. Finally, confirmatory factor analysis was used to assess the construct validity of the CCSBS, and SPSS and LISREL software were applied to analyze the data.

Results: The findings of this study provided strong support, which confirmed the content and face validities. Regarding the convergent and divergent validity, perceived vulnerability, perceived severity and deterioration, and perceived barriers have a direct and significant relationship with the three variables of depression, anxiety, and stress. On the other hand, perceived motivation had a significant inverse correlation with all three variables of depression, anxiety, and stress. Additionally, perceived self-efficacy had a significant inverse correlation with depression. The results of Cronbach's alpha indicated the appropriate internal consistency of the whole questionnaire and its components. Cronbach's alpha for the whole questionnaire was 0.78. According to confirmatory factor analysis, the goodness of fit indicators of the proposed model was confirmed and the paths were significant.

Conclusion: CCSBS is a reliable and valid tool for measuring the screening behavior of cervical cancer in Iranian women and it appears to be a comprehensive and useful tool for assessing women's beliefs related to cervical cancer and cervical cancer screening.

Keywords: Cancer, Cervical cancer, Health behavior, Psychometric testing, Screening.

Introduction

Cervical cancer is the fourth most common malignant neoplasm after breast cancer (Arbyn et al., 2020) and the third most common cancer of the female genital tract, and according to the latest statistical studies, cervical cancer is one of the most prevalent genital cancers in some countries including Japan (Maree & Wright, 2011; Tanaka et al., 2022). According to studies in Iran, the incidence of this cancer is 4.5 per 100,000 people annually, indicating the importance of cervical cancer among Iranian cancer patients (Farajzadegan et al., 2012). Patients with cervical cancer report psychological distress (Jentschke et al., 2020), fatigue, stress, and feelings of illness in addition to physical problems

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related to treatment (De Groot et al., 2005; Isaka et al., 2017). It has been shown that one of the first and most significant components affected by different types of cancer, especially cervical cancer, is the patient's quality of life, which can affect different aspects of life (Rutherford et al., 2019; Khalil et al., 2015; Farajzadegan et al., 2021; Rafiepoor, 2019) and reduce the emotional well-being of patients (Kim et al., 2010).

Despite advances in the treatment of cervical cancer over the past few decades, this cancer remains one of the major health problems in Iranian and worldwide women (Allahverdipour & Emami, 2008). High mortality from cervical cancer can be decreased remarkably via appropriate health programs for prevention and screening (Refaei et al., 2020). Preventing cervical cancer, like any other chronic disease, requires a model to identify the components of healthy behavior to promote health (Bouvard et al., 2021; Redding et al., 2000). Many health behavior researchers aim to identify the determinants of health behavior. One of the main ways to gain knowledge about health behaviors is through empirical testing and expanding theories in the field (Noar & Zimmerman, 2005). The most important health behavior theories are the Health Belief Model (HBM) (Maiman & Becker, 1974; Rosenstock et al., 1988), the Reasoned Action Model/ (Fishbein & Ajzen, 1980), the Theory of Planned Behavior (TPB) (Ajzen & Madden, 1986), and Social Cognition Theory (SCT) (Bandura, 1986). Each of these models focuses on a specific component of health behaviors, and although they have some commonalities, no consistent model can be reached (Weinstein, 1993). It is important to examine the existing theories because they are not only fundamentally the designer of behavior change interventions, but also practically functional. One of the major interventions to prevent cervical cancer in women is screening behaviors that are important and appropriate behaviors for the effective treatment of primary lesions and the prevention of this disease (Logan & McIlfatrick, 2011).

Given the importance of cervical cancer screening behaviors and the prevention and control of these diseases, the rate of screening behaviors is not optimal (Care, 2013). As a result, there is a strong need to invest more in improving health education and communication in health programs to promote awareness of the need to screen for cervical cancer (Asl et al., 2020). A study of factors associated with cervical cancer screening and its barriers in Kashan (Iran) showed that of the total sample of 1000, 200 individuals never had a Pap smear test. This study also indicated that the Pap smear test had a significant relationship with marital status, income, and the number of deliveries (Abedzadeh et al., 2009). Another research conducted in Iran demonstrated that three main concepts are recognized as facilitators and barriers to regular Pap smear testing: (1) Belief vs. disbelief in the possibility of cancer control and treatment, (2) Priority vs. non-priority of health in life, and (3) Ability vs. inability to overcome the challenges ahead (Refaei et al., 2020). In addition, studies have shown a significant and meaningful relationship between whereabouts, age, and education with women's awareness of screening behaviors (Chan et al., 2015; Ramezani et al., 2001). The results of a study examining patterns of health behavior associated with cancer screening displayed that age, educational attainment, source of service, and health insurance were significantly related to cervical cancer screening (Meissner et al., 2009). The effectiveness of the educational program based on health belief models on cervical cancer screening behavior in Hamadan (Iran) showed that training and improving women's awareness could increase the number of participants for screening (Shojaeizadeh et al., 2011). Also, another study

on the role of health beliefs in predicting barriers to cervical cancer screening indicated of the 681 participants, only 23.50% had a history of Pap smear testing and had a lower average perceived barrier score than those who did not (Hajializadeh et al., 2013).

According to previous research on the factors of health behavior in patients with cervical cancer, no comprehensive scale has been designed to assess different aspects of health behavior in cervical cancer. Additionally, it should be noted that healthcare professionals need to understand how cultural values and beliefs influence screening practice. Understanding how sociocultural attitudes and health beliefs impact women's cervical cancer screening practices will help healthcare professionals to develop more effective cervical cancer screening programs (Guvenc et al., 2011). The purpose of this study was to develop a tool to examine the components of cervical cancer screening behavior based on the main constructs of classical health behavior models and by considering Iranian cultural components and assessing its validity and reliability.

Method

The current research is a cross-sectional study. The statistical population of this study included all literate (at least elementary) women aged 30 to 70 referred to health and treatment centers in Tehran. The sample included 376 women referred to Javaheri Health Center during the study period due to health problems selected through convenience sampling. The sample size was between 500 and 300 individuals based on multivariate data analysis for evaluating path analysis and confirmatory factor analysis (Hooman, 2006). The statistical sample had no history of cervical cancer. The criteria for participation in the study were based on age (30-70 years old), educational level (at least elementary), and living area (Tehran). Having a history of cervical cancer and disability to answer the questionnaires because of severe physical or mental disorders were exclusion criteria.

The necessary coordination was achieved with the authorities of the Javaheri Health Center to conduct the research (which is a suitable center for collecting samples due to its geographical location, range, and the number of clients and providing specialized services for women). Then, the researcher equipped two psychology graduate students with the idea of the study, the sample characteristics, and how to conduct the research questionnaires. Due to the arrangements with the authorities of the health and treatment center, after preparing the questionnaires, the required numbers were given to the presenters, and they attended the clinic during working hours. They gave the questionnaires to the women who met the inclusion criteria and retrieved them after providing the necessary information and giving them sufficient time to complete them. A total of 400 questionnaires were collected during the study. Each questionnaire included a demographic information questionnaire, Cervical Cancer Screening Behavior Scale (CCSBS), and Depression, Anxiety, and Stress Scale (DASS). Questionnaires were reviewed, and several cases were rejected because of some defects. Finally, 376 questionnaire packages were prepared for data entry and data analysis.

The participants were asked to answer the questionnaires unassisted. Also, in the guideline of the questionnaires' instructions, it was mentioned that participants should avoid writing their names. Participants' consent was obtained, and it was explained to them that their private information would be confidential. The following Instruments were used:

Demographic information questionnaire: In this study, some research related to the subject was

reviewed to collect demographic data, and then the required data were assessed. Eventually, an 8-item questionnaire was prepared, in which the first five items contained general demographic information: 1) Age, 2) Education at three levels (below diploma, diploma, bachelor degree or higher), 3) Marital status at three levels, 4) Occupation in three levels (housewife, employee, self-employment), 5) Having or not having children. The three remaining items that include demographic information associated with the health behavior are 6) a History of cervical problems (other than cancer), 7) Severe medical illness (asthma and diabetes, etc.), and 8) a Family history of cervical cancer.

Cervical Cancer Screening Behavior Scale (CCSBS): The present study was designed to measure the constructs of health behavior models specifically for women's health behavior (cervical cancer screening), called the HBS of cervical cancer screening. The Cervical Cancer Screening Behavior Scale (CCSBS) contains a set of health behavior determinants used in the most well-known and most used health behavior models. The models considered are the Health Belief Model (HBM), the Theory of Planned Behavior (TPB), and Social Cognitive Theory (SCT); and the employed constructs are the main constructs used in the models. These constructs, which are predominantly equivalent and are used in different terms in the models, are as follows: a) Attitudinal beliefs containing a set of health behavior barriers, health behavior benefits, and health motivation constructs, b) Self-efficacy beliefs that comprise a set of self-efficacy and perceived behavioral control constructs, c) Normative beliefs constituting a set of subjective norm constructs, social support, and motivation to comply with the norm, d) Risk-related beliefs including a set of perceived susceptibility constructs, and perceived severity or deterioration. The Cervical Cancer Screening Behavior Scale (CCSBS) consists of three sections and 40 items: Part I includes items 1 to 30. Questions 1 to 24 evaluate the models of health belief, social reasoning, and cognitive practice constructs as follow: Question 1 to 3: Perceived susceptibility, questions 4 to 9: Perceived severity and deterioration, Question 10 to 14: Perceived benefits, Questions 15 to 24: Perceived Barriers, Questions 25 to 30: Perceived Self-efficacy or Perceived Behavioral Control. This section is measured through five points on a Likert scale. Scores of 1 = strongly disagree, 2 = disagree, 3 = no opinion, 4 = agree, and 5 = strongly agree indicate the degree of belief expressed, and the higher the scores, the stronger the feeling about the material. All items on the scale were positively correlated with the desired behavior (cervical check-up), except for perceived barriers (15 to 24) that were negatively correlated with the desired behavior (cervical check-up). Part 2: Questions 1 to 3: Measures normative beliefs and social support. A five-point Likert scale was used to rate this section. Scores of 1 = not at all, 2 = little, 3 = somewhat, 4 = high, and 5 = very high indicate the level of social support for healthy behavior, and the motivation to comply with significant others in life for healthy behavior. Part 3: Questions 1 to 7: Measures health motivation, and include health-promoting behaviors such as proper nutrition, physical activity, annual checkups, and the importance of health for the individual. The items in this section are rated on a five-point Likert scale from strongly disagree to strongly agree. Scores of 1 = strongly disagree, 2 = disagree, 3 = no opinion, 4 = agree, and 5 = strongly agree to show the amount of health motivation, and higher scores indicate stronger health motivation.

The development and validation of the Cervical Cancer Screening Behavior Scale (CCSBS) took place during the following steps: The most common and famous health behavior models and theories were identified and selected to determine

the structure of the questionnaire. These models include the Health Belief Model (HBM), the Theory of Planned Behavior or Theory of Reasoned Action (TPB/TRA), and the Social Cognition Theory (SCT). Then after studying the models that predict health behavior, their main constructs were extracted. In various models, these constructs involve the same concepts illustrated in different terms. Constructions and their common methods were obtained from analyses of related research and studies (Champion, 1999; Sutton, 2005; Trafimow, 1999). These constructs are Attitudinal beliefs (health behavior barriers constructs, health behavior benefits, and health motivation); self-efficacy beliefs (self-efficacy constructs and perceived behavioral control); normative beliefs (constructs of subjective norms, social support, and motivation to comply with norms) ؛ risk-related beliefs (perceived susceptibility constructs and perceived severity or deterioration). A version of the questionnaire, along with a survey sheet, was given to 3 obstetricians, to determine the face validity of the tool (to assess the apparent shape of the tool). A version of the questionnaire, along with a survey sheet, was provided to 3 psychologists, to determine the content validity of the tool. After collecting the experts' opinions and making adjustments and modifications, the second version of the questionnaire was prepared. Then, to assess the total reliability, the questionnaire was given to 40 women referring to health center clinics, and Cronbach's alpha was calculated for each part of the questionnaire and used to imprint and modify it. Reliability of the first part of the cervical cancer questions was obtained: 0.78; also internal consistency of the questions was calculated (correlation of each question with other questions and correlation of each question with the whole test); difficult questions or questions whose correlation with other questions was low, were identified, and removed or modified to increase reliability. After making the necessary revisions, the final version of the questionnaire was obtained. During the study, the Cervical Cancer Screening Behavior Scale (CCSBS) was offered to 376 women referring to the women's health clinics, and the alpha coefficient was calculated for each part of it. Evidence for the validity of the scale relies on face validity and content validity, which was confirmed by 3 obstetricians and 3 health psychologists.

Depression Anxiety Stress Scale (DASS_21): Psychological distress was measured by using the brief 21-item version of the Depression Anxiety Stress Scale (DASS_21) which is a widely applied measure of psychological distress in adults (Lovibond & Lovibond, 1995). A great deal of literature shows that DASS is a reliable and valid measure of depression, anxiety, and tension/ stress in both nonclinical and clinical populations (Henry & Crawford, 2005). It was also found that the respondents displayed the extent to which they experienced each of the symptoms represented in the items during the previous week on a 4-point Likert-type scale ranging from0 (Did not apply to me at all) to 3 (Applying to me very much) (Lovibond & Lovibond, 1995). In this study, Cronbach's alpha and reliability of the questionnaire were 0.85.

Confirmatory factor analysis was used to assess the construct validity of the Cervical Cancer Screening Behavior Scales Csbs) and SPSS and LISREL software were applied to analyze data.

Results

The present study aimed to determine the psychometric properties of the Cervical Cancer Screening Behavior Scale (CCSBS). It was attended by 376 female participants in terms of education level, 152 of whom (40.4%) had a high school diploma, 167 (44.4%) had a diploma, and 57 (15.2%) had a bachelor's degree. In terms of

marital status, 342 (91%) were married, 25 (6.6%) were divorced, and 9 (2.4%) were single. Among the participants, 318 women (84.06%) were housewives, 38 women (10.1%) were government employees, and 20 women (5.3%) were self-employed. About 26 (6.9%) had a history of cervical cancer in their family members, and 350 (93.1%) did not. Of whom, 65 women (17.3%) had a history of cervical problems (except cancer), and 310 (82.4%) did not. The mean and standard deviation of the participant's ages were 49.23 and 9.28, respectively. Table 1 shows the mean and standard deviation of the research variables.

Table 1. The mean and standard deviation of the research variables.

Variables	Mean	Standard Deviation
Perceived Vulnerability	5.32	3.07
Perceived Severity and Deterioration	16.54	7.50
Perceived Benefits	21.69	3.66
Perceived Barriers	24.07	6.57
Perceived Self-efficacy	23.58	7.49
Normative Beliefs	8.85	4.73
Perceived Motivation	28.17	5.49
Depression	5.48	4.99
Anxiety	5.57	4.63
Stress	8.38	5.34

The results of Cronbach's alpha indicated the appropriate internal consistency of the whole questionnaire and its components. Cronbach's alpha for the total questionnaire was 0.78, and perceived vulnerability, perceived severity and deterioration, perceived benefits, perceived barriers, perceived self-efficacy, normative beliefs, and perceived motivation were 0.93, 0.86, 0.78, 0.62, 0.96, 0.94, and 0.75, respectively, which all components showed appropriate reliability.

At first, statistical assumptions were investigated. Kaiser-Meyer-Olkin (KMO) test for sampling adequacy (830) and Bartlett's test of sphericity (χ^2= 10729.183, P= 0.001) indicated the ability of scale materials to measure the components. Confirmatory factor analysis was used to assess the construct validity of the Cervical Cancer Screening Behavior Scale (CCSBS). For this purpose, a seven-factor model was defined, each measured through its observable variables. It should be noted that item 22 was removed from the tool and statistical analysis because its path coefficient was not meaningful in primary confirmatory factor analysis. According to the results, all paths were significant at the $p<0.05$ level. Also, absolute and comparative fit indices were applied to determine the hypothetical model fit. Although the Chi-Square index was used in the present study to evaluate the overall fit of the model, it is strongly influenced by sample size, and the large samples generally show a good fit to the model (Raykov & Marcoulides, 2012). Due to this limitation, the ratio of Chi-Square to the degree of freedom or CMIN/DF is also reported, which minimizes the effect of sample size on the Chi-Square indicator. Although there is no agreement on the acceptable value of this indicator, values below 3 usually display a good fit to the model. The RMSEA and SRMR are also the main indicators of model goodness of fit. For an optimal fit, the RMSEA value model should be smaller than 0.1 and preferably smaller than 0.08. Additionally, the SRMR value should be less than 0.08 (Kline, 2015). For the CFI, TLI, and IFI indices, values above 0.9 indicate model acceptance and values above 0.95 indicate good model fit (Kline, 2015). For the hypothetical model, all the indicators show the appropriate fit of the model (Chi-Square: 1543.40, Chi-Square/df: 2.26, RMSEA: 0.05, SRMR: 0.06, CFI: 0.91, IFI: 0.91, TLI: 0.91).

Table 2 shows the results of confirmatory factor analysis and the non-standard coefficients, standard coefficients, T values, and significance level for all hypothetical model paths. Based on the values of T and significance level, it can be concluded that all paths are significant.

As can be seen in Table 2, the T-test for all paths was greater than 1.96, indicating that all paths were significant. For assessing the convergent and divergent validity of this questionnaire, the correlation coefficients of the Cervical Cancer Screening Behavior Scale (CCSBS) with the

Table 2. Non-standard coefficients, standard coefficients, T values, and significance level for all hypothetical model paths

Path	*Non-standard coefficient*	*Standard coefficient*	*T value*	*P*
Perceived Vulnerability to Item 1	1.08	0.90	23.80	0.001
Perceived Vulnerability to Item 2	1.14	0.98	26.09	0.001
Perceived Vulnerability to Item 3	1	0.83		
Perceived Severity and Deterioration to Item 4	2.67	0.91	7.72	0.001
Perceived Severity and Deterioration to Item 5	2.60	0.91	7.72	0.001
Perceived Severity and Deterioration to Item 6	2.78	9.95	7.78	0.001
Perceived Severity and Deterioration to Item 7	1.15	0.41	5.83	0.001
Perceived Severity and Deterioration to Item 8	1.57	0.53	6.57	0.001
Perceived Severity and Deterioration to Item 9	1	0.38		
Perceived Benefits to Item 10	1.03	0.54	8.88	0.001
Perceived Benefits to Item 11	1	0.72	10.97	0.001
Perceived Benefits to Item 12	1.16	0.72	10.98	0.001
Perceived Benefits to Item 13	1.15	0.63	10	0.001
Perceived Benefits to Item 14	1	0.64		
Perceived Barriers to Item 15	1.02	0.30	3.93	0.001
Perceived Barriers to Item 16	1.23	0.35	4.28	0.001
Perceived Barriers to Item 17	1.50	0.61	5.21	0.001
Perceived Barriers to Item 18	1.66	0.57	5.13	0.001
Perceived Barriers to Item 19	1.70	0.61	5.21	0.031
Perceived Barriers to Item 20	1.19	0.41	4.59	0.001
Perceived Barriers to Item 21	0.95	0.34	4.16	0.001
Perceived Barriers to Item 23	0.95	0.34	4.16	0.001
Perceived Barriers to Item 24	1	0.32		
Perceived Self-Efficacy to Item 25	2.65	0.92	11.07	0.001
Perceived Self-Efficacy to Item 26	2.75	0.97	11.25	0.001
Perceived Self-Efficacy to Item 27	2.80	0.99	11.32	0.001
Perceived Self-Efficacy to Item 28	2.79	0.99	11.32	0.001
Perceived Self-Efficacy to Item 29	2.61	0.94	11.14	0.001
Perceived Self-Efficacy to Item 30	1	0.50		
Normative Beliefs to Item 31	1	0.97		
Normative Beliefs to Item 32	1.02	0.98	56.16	0.001
Normative Beliefs to Item 33	0.83	0.78	23.36	0.001
Perceived Motivation to Item 34	0.87	0.68	7.47	0.001
Perceived Motivation to Item 35	1.05	0.82	7.87	0.001
Perceived Motivation to Item 36	1.29	0.73	7.63	0.001
Perceived Motivation to Item 37	1.24	0.83	7.90	0.001
Perceived Motivation to Item 38	0.84	0.53	6.73	0.001
Perceived Motivation to Item 39	0.34	0.14	2.52	0.012
Perceived Motivation to Item 40	1	0.41	23.80	0.001

variables of depression, anxiety, and stress were calculated. The results showed that perceived vulnerability had a direct and significant relationship with the three variables of depression (R= 0.186, P<0.01), anxiety (R= 0.176, P<0.01), and stress (R= 0.116, P<0.05), also perceived severity and deterioration had a direct and significant relationship with depression (R= 0.262, P<0.01), anxiety (R= 0.259, P<0.01), and stress (R= 0.220, P<0.01), and perceived barriers had a direct and significant relationship with the three variables of depression (R= 0.263, P<0.01), anxiety (R= 0.166, P<0.01), and stress (R= 0.197, P<0.01). On the other hand, perceived motivation had a significant inverse correlation with all three variables of depression (R= -0.167, P<0.01), anxiety (R= -0.120, P<0.05), and stress (R= -0.111, P<0.05). Additionally, perceived self-efficacy had a significant inverse correlation with depression (R= -0.164, P<0.01).

Discussion and Conclusion

The purpose of this study was to develop a tool to examine the components of cervical cancer screening behavior, including perceived vulnerability, perceived severity and deterioration, perceived benefits, perceived barriers, perceived self-efficacy or perceived behavioral control, normative beliefs and social support, and health motivation or perceived motivation based on main constructs of classical health behavior models and by considering Iranian culture components and assessing its validity and reliability.

According to health psychologists, face validity and content validity of the Cervical Cancer Screening Behavior Scale (CCSBS) were appropriate. Health behavior theories serve as a guide for knowing what variables to be measured and how to measure them. These theories contain constructs that are very similar (or identical) but use different terminology (Noar & Zimmerman, 2005). Our reading of the literature showed some consensus regarding which variables or constructs are most important to health behavior. So, we extracted these main constructs for developing a scale to assess cervical cancer screening behavior. Theory-driven scale items that focused on cervix screening behavior resulted in a valid scale according to health psychologists' point of view.

In the present study, confirmatory factor analysis was used to assess the construct validity of the Cervical Cancer Screening Behavior Scale (CCSBS). Findings showed that all paths were significant. Also, the goodness of fit indices of the model was appropriate. It should be noted that item 22 was removed from the tool and statistical analysis because its path coefficient was not meaningful in primary confirmatory factor analysis. As we noted earlier, to develop a valid scale for predicting screening behavior first, we identified core determinants of health behavior, and then main constructs with the most support from varying theories were used to make items of the Cervical Cancer Screening Behavior Scale (CCSBS). Since many constructs in theories are similar or the same, when we measure one variable, it may cut across many theories, predicting a reasonable level of construct validity. The possible reason for eliminating item 22 from the scale was that although a painful procedure is an important barrier for screening behavior, the pop smear test does not induce such pain in women. Other published scales have had similar trajectories, i.e. dimensions designed originally did not equate with the final dimensions (Ping et al., 2018; Tennant et al., 2007).

In addition, the results displayed that perceived vulnerability, perceived severity and deterioration, and perceived barriers have a direct and significant relationship with the three variables of depression,

anxiety, and stress. On the other hand, perceived motivation had a significant inverse correlation with all three variables of depression, anxiety, and stress, and perceived self-efficacy had a significant inverse correlation with depression. Because psychological distress (depression, anxiety, stress) contributes to poor health behavior or weak healthy regimen compliance (St-Pierre et al., 2019), DASS appears to be a reasonable measure for evaluating divergent and convergent validity of the Cervical Cancer Screening Behavior Scale (CCSBS). As expected, perceived motivation and perceived self-efficacy had a significant inverse correlation with psychological distress.

The internal consistency method was used to determine the reliability of the questionnaire. The results of Cronbach's alpha indicated the proper internal consistency of the whole questionnaire and its components. One of the strengths of this scale was that while it has covered all the important constructs of health behavior models, it could manage items precisely and sufficiently with an appropriate difficulty level. These characteristics make it reliable and applicable for assessing women's cervical cancer screening behavior.

Some limitations in this study should be considered when interpreting these findings. First, we used a cross-sectional design to evaluate the Cervical Cancer Screening Behavior Scale (CCSBS), which does not allow examination of its discriminant validity. Second, our sample included only subjects from Tehran, Iran, which might limit the generalizability of the findings. So, it is necessary to apply the scale to other populations for further testing its items in the future. As we used general health behavior models and common determinant constructs, it seems this scale could apply to other screening behaviors, so we suggest future research put this to the strong possible test.

In conclusion, the Cervical Cancer Screening Behavior Scale (CCSBS) is a reliable and valid tool for measuring the screening behavior of cervical cancer in Iranian women, and it appears to be a comprehensive and useful tool for assessing women's beliefs related to cervical cancer and cervical cancer screening.

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