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Development of the self-efficacy for testicular self-examination scale

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Abstract

Background: Men between the ages of 20 and 34 years are at highest risk for testicular cancer yet many lack knowledge and confidence in performing self-examination. The Self-Efficacy to Perform Testicular Self-Examination Scale (SEPTSES) is a 7-item questionnaire to be completed by men, which is designed to measure their confidence in self-examining their testicles. The purpose of this methodological study was to determine the validity and reliability of this self-report measure.

Methods: Content validity of the scale and clarity of items were established with a panel of experts. The SEPTSES and three valid scales of related constructs were completed by two samples of men (homeless [$n = 150$] and non-homeless [$n = 156$]) aged 18–34 years.

Results: A single factor explained 51.5% of the variance of the scale and Cronbach's alpha was satisfactory ($\alpha = 0.84$). Construct validity was further supported by significant correlations with the other three scales; further support was established by a significant difference in mean scores between the two samples [$t(303) = -5.44, p < 0.001$].

Conclusion: The SEPTSES is a valid, unidimensional scale and it can be used in further research and in clinical practice as an assessment of this aspect of men's health.

Keywords

Testicular self-examination; Instrument development; Self-efficacy; Testicular cancer

Testicular cancer is the most common malignancy in men between the ages of 20 and 34 years, and the incidence continues to increase [1]. It is estimated that in 2004 there will be 8,980 new cases of testicular cancer and 360 associated deaths [2]. Early diagnosis and improved treatment contributed to a 72% decrease in the mortality from 1950 to 2000 and a 5-year survival rate increase from 57% in 1950 to 95.8% in 1999 owing to early detection, new and improved treatment, and increased awareness of risk factors [1].

Known risk factors such as cryptorchidism (undescended testicle) and family history of testicular cancer are non-modifiable [3], thus early diagnosis and treatment are essential. Screening tests that are critical to early diagnosis include physician palpation and individual

self-examination of the testes. Notably, 9 out of 10 testicular cancers are first found by the patient, most often as a painless testicular mass [4,5]. As is the case with all cancers, late detection negatively influences effective treatment and the chance of survival.

Advocates for cancer prevention, including the US Food and Drug Administration [6] suggest that testicular self-examination should occur on a monthly basis, starting at age 15 [7,8]. However, current screening practices for testicular cancer, either by self-examination or physician examination are less than optimal for meeting suggested guidelines for early detection. In a retrospective study of the prevalence of testicular screening by physicians, investigators found that over a 1-year period, only 15% of the men in the sample had received a testicular examination [9]. Other investigators found that less than 50% of hospital resident pediatricians in their sample taught testicular self-examination to their adolescent patients [10]. The resident's confidence in performing and teaching TSE and also knowing someone with testicular cancer were the two most important factors related to teaching their adolescent patients about TSE.

A similar pattern of inadequate performance of TSE is found in research on self-performance of TSE. A study of 191 young adult men, found that 64% rarely or never practiced TSE [4]. Similarly, another study found that only 2% of a sample of 274 young Dutch men 15–19 years of age reported performing regular TSE [11]. Moreover, a study of 633 male college students found that the students improved their performance significantly from 4.7% to 18% for those who received written education materials alone and 36% for those who in addition were given a lecture on TSE by a physician [12]. However, regardless of the method of intervention, the majority of students still did not perform TSE. This study suggests that there are multiple factors affecting the practice of TSE. Acquiring the knowledge and skills for self-examination are but two of these factors. High-risk young men such as the homeless and school drop-outs as well as those without health insurance may not have access to routine health care services and be even less likely to have learned about self-examination either in school or from a health care provider.

Social cognitive theory suggests that complex preventive behaviors such as engaging in self-care and health promotion, to avoid disease or seeking treatment for exposure or symptoms, are associated with self-efficacy, or the belief that one can perform the desired behavior - *efficacy expectations*, and this performance will lead to the desired outcome- *outcome expectations* [13,14]. Although Bandura [14] asserts that most health habits are formed during childhood and adolescence, most men have probably not developed the habit of testicular self-examination. In a study of male college students, attitude and compliance with significant others' (i.e. close family members, domestic partners, or friends) wishes were associated with beliefs about the outcomes of performing TSE [15]. In another study, when female college students were compared with the male students (33% vs. 19%), although men were less engaged, both groups were negligent about either performing breast or testicular self-examination. However, both men and women were highly motivated by fear of developing cancer and their confidence in their ability to engage in self-examination practice [16].

The purpose of this study was to determine the validity and reliability of a new, short self-report measure of self-efficacy to perform TSE. Hypotheses were tested to determine if there were: a) significant correlations with other measures of self-efficacy and related constructs; b) differences between homeless and non-homeless participants; and c) differences between those with a personal or family history of cancer and those without such a history.

Methods

Design and setting

A methodological design was used to develop and test the Self-Efficacy to Perform Testicular Self-Examination Scale (SEPTSES). The study took place in a metropolitan area in the south central U.S. Two settings for data collection were a large state university and a community-based street outreach social services project for homeless youth located adjacent to the university campus.

Samples

Two samples of participants were recruited: 156 men (51% of total sample) who were university students or employees (non-homeless) and 150 men who were homeless and sought health and social services from a street outreach program. Table 1 includes a description of the ethnicity of the two samples. The mean age of the combined samples was 21.9 ± 3.6 years.

Instruments

A survey containing a demographic form and four valid scales was developed for the study. Participants provided demographic information about age, highest level of education, ethnicity, family history of testicular cancer, personal history of testicular cancer, personal history of any cancer, and history of sexual abuse.

The SEPTSES, the focus of this study, was designed in the Bandurian tradition [14] to measure efficacy expectations (i.e., both level and strength of the participant's confidence in performing TSE). The SEPTSES consists of a 7-item Guttman scale with a yes-no response format.

If the response selected is yes, then strength of prediction is measured on a 0%–100% scale in 10% increments. The SEPTSES determines a person's awareness and knowledge, appropriate timing, correct technical procedures, and physician notification of unusual findings. Cronbach's alpha reliability coefficient for the combined samples in this study was 0.84.

Three other instruments were included to determine construct validity.

1. The Multidimensional Health Locus of Control Scale (MHLCS), which contains three independent subscales with six items each [17]. The three subscales are measures of internality (I), powerful others externality (PE), and chance externality (CE).

2. The Self-Efficacy to Use Condoms Scale (SEUCS), which contains fourteen items that measure confidence in using condoms [18].
3. Three subscales of the Multidimensional Sexual Self-Concept Questionnaire (MSSCQ) [19].

Cronbach's alpha reliability coefficients for all scales used ranged from 0.67 to 0.87 for the combined samples.

Procedure

Development of the SEPTSES occurred in two phases, both of which received full institutional review board approval for the protection of human subjects. Prior to data collection, each participant was informed of the purpose, procedures, risks, and benefits of the study. Each was also given a copy of the consent form to keep. In Phase One, items were derived from the literature and a content validity index (CVI) of 0.83 was computed [20] and the number of items was reduced to seven to improve clarity and clinical usefulness of the scale. In Phase Two, the 7-item version was tested with the two samples.

After receiving a written letter describing the purpose, risks, and benefits of the study, participants completed paper-pencil surveys containing the demographic form and scales. After completing the survey and returning it in a sealed envelope to the research team member, each participant received \$5 in cash.

Data analyses

Principal component analysis was done to validate the SEPTSES and Cronbach's alpha was computed to establish reliability. Pearson product-moment correlations and independent samples t-tests were computed to determine construct validity.

Results

The mean SEPTSES score for the entire sample was 53.00 with a standard deviation of 28.39. In all of the ethnic/racial categories, except Hispanic and Asian, the range of scores was 0–100. Descriptive statistics for the remaining measures are shown in Table 2.

Principal components analysis of the SEPTSES extracted one factor (Table 3) with an eigenvalue greater than 1 ($EV = 3.602$). This factor explained 51.5% of the total variance of the scale, and the reliability was acceptable at $\alpha = 0.84$ (Cronbach's alpha).

For the combined sample, significant positive correlations were found between the SEPTSES and the locus of control internality subscale ($r = 0.185, p < 0.01$), self-efficacy to use condoms scale ($r = 0.275, p < 0.01$), the sexual self-concept sexual problem prevention sub-scale ($r = 0.169, p < 0.01$), and the health locus of control powerful others subscale ($r = 0.153, p < 0.01$), providing evidence of construct validity.

There was a significant difference in means between the two samples ($t = -5.44, p < 0.001$). The homeless participants had a significantly higher mean score (61.6 ± 31.9) than the non-homeless participants (44.7 ± 21.6). There were no significant correlations found between

the SEPTSES and family history of testicular cancer, personal history of testicular cancer, and personal history of any type of cancer. The frequency of individuals with past cancer diagnoses in this sample was a rare event, thus the mean difference between groups was not computed.

Discussion

The SEPTSES was developed to measure young men's self-efficacy (i.e., the belief that one can perform the desired activity) to perform testicular self-examination routinely. The race/ethnicity of the samples is generally similar to that of the US population [21], with the majority being Caucasian; however, multi-racial, Hispanic, and Native Americans were over-represented.

The validity of the SEPTSES was evaluated through three categories of evidence: self-evident, pragmatic measures, and construct validity. Participants who felt they were personally (internally) in control of their health, believed they were able to prevent sexual problems, and were confident about using condoms were also confident about performing TSE. Finding a significant difference in scores between the homeless and non-homeless samples also supports construct validity. This is also a new and interesting finding because it may indicate a sense of confidence among the homeless young men in being able to take care of themselves that has been borne out of their survival skills.

The clinical significance of the SEPTSES includes multiple domains of knowledge and behavior. First, it exposes an individual to information that may increase awareness about testicular cancer and the importance of early detection and treatment. Second, it presents the steps involved in performing TSE, thus increasing the domain of procedural knowledge. Third, it measures appropriate timing for self-examination, and thus creates a future intention to act on one's own behalf (i.e., self-care). Finally, it alerts the individual who detects a change in the testes to seek help.

The SEPTSES is particularly useful for men at high-risk, including those between 20 and 34 years of age, those with a family history of testicular cancer, and those with a history of cryptorchidism. The scale could be completed in the patient waiting room and then discussed with the physician following a routine physical examination. The scale may also be useful in primary care settings where homeless men are served.

The findings from this study are limited by the use of self-report measures in non-probability samples in a single geographic area. Despite these limitations, however, the findings provide preliminary evidence that the self-efficacy to perform testicular self-examination is a measurable phenomenon and the SEPTSES is a valid and brief scale for measuring it.

In conclusion the findings from this study provide evidence to support the use of this brief scale in future research and clinical practice. Additional study is needed to establish psychometric properties of the scale in a representative sample of young men, particularly, ethnic and cultural minorities. In primary care settings, the scale can serve to raise awareness of both providers and consumers of an important component of sexual health in men.

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Self-Efficacy to Perform Testicular Examination Scale

1. I know that testicular self-examination is important for my health.
2. I know that testicular self-examination is most effective if done the same time each month.
3. It is easy for me to remember to examine my testes once each month.
4. I know how my testes should feel when I examine them.
5. I am confident that I can examine my testes once each month if someone reminds me.
6. I know how to use my index and middle fingers under the testicle and the thumbs on top to roll it and feel for a lump, pain, or change in size.
7. If I have pain or find a lump or change in the size of my testes, I know where to go to find help.

Response format: No = 0%; Yes = 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, or 100%

Table 1

Race/ethnicity of participants in study

Race/ethnicity	Sample source		Total participants
	University	Homeless	
Caucasian	93	93	186 (60.8%)
Hispanic	31	14	45 (14.7%)
African-American	14	15	29 (9.5%)
Asian	10		10 (3.3%)
Native American	1	8	9 (2.9%)
Multi-racial	6	18	24 (7.8%)
Missing	1	2	3 (1.0%)
Total	156	150	306

Table 2

Descriptive statistics of all scales

Scale	Mean	SD	Range
MHLCP ^a	3.03	1.00	1–6
MHLCCh ^b	3.01	0.97	1–5.67
MHLCI ^c	4.64	0.77	1.17–6
SEUC ^d	4.15	0.68	1.43–5
SSCCh ^e	1.42	1.06	0–4
SSCP ^f	0.89	0.96	0–4
SSCS ^g	3.07	0.87	0–4

^a Multidimensional Health Locus of Control (MHLC) powerful others externality subscale.

^b MHLC Chance externality subscale.

^c MHLC Internality subscale.

^d Self-efficacy to use condoms.

^e Multidimensional Sexual Self-concept Questionnaire scale (SSC) Chance/luck sexual control subscale.

^f SSC Powerful others sexual control subscale.

^g SSC Sexual problem prevention subscale.

Table 3

Factor structure of the SEPTSES

SEPTSES items	Factor loadings
Know how testes should feel when examined	0.81
Know how to examine testes with fingers	0.80
Self-exam important for my health	0.74
Self-exam effective same time each month	0.71
Remember to examine once each month	0.69
Know where to go to find help	0.65
Confident once each month if reminded	0.59
Eigenvalue	3.60
% variance explained	51.5%
Cronbach's alpha (<i>n</i> = 306)	0.84