ENDGAMES

STATISTICAL QUESTION

Screening tests: indices of performance

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The SCOFF questionnaire was assessed as a screening tool for eating disorders in primary care. The questionnaire consists of five questions that deal with core features of anorexia nervosa and bulimia nervosa. Consecutive women attendees aged 18-50 years at two general practices were invited to participate and 341 agreed. All women completed the SCOFF questionnaire and also underwent a clinical diagnostic interview for eating disorders based on criteria from the *Diagnostic and Statistical Manual of Mental Disorders* (fourth edition).[1]

Women who responded yes to two or more of the five questions on the SCOFF questionnaire were identified as "positive" and at "high risk" of eating disorders; otherwise they were identified as "negative" and at "low risk" of eating disorders. The table shows the results of the SCOFF questionnaire in relation to the clinical diagnostic interview.

Which one of the following is the calculation for the positive predictive value of the SCOFF questionnaire as a screening tool for eating disorders in primary care?

a) $(11/(11+2)) \times 100\% = 84.6\%$

b) $(11/(11+34)) \times 100\% = 24.4\%$

c) $(294/(34+294)) \times 100\% = 89.6\%$

d) $(294/(34+2)) \times 100\% = 99.3\%$

Answers

Answer *b* is the correct calculation. The positive predictive value is the proportion, expressed as a percentage, of women identified as "positive" who were subsequently diagnosed with an eating disorder. Therefore, the positive predictive value measures the accuracy of a "positive" result on the SCOFF questionnaire. Of the 45 women identified as "positive" by the SCOFF questionnaire (high risk), 11 (24.4%) were subsequently diagnosed with an eating disorder. The remaining 34 (75.6%) women were incorrectly identified by the SCOFF questionnaire because they were subsequently not diagnosed with an eating disorder by the clinical diagnostic interview.

The purpose of the SCOFF questionnaire is not to provide a diagnosis of eating disorders but to identify those women in whom the suspicion of an eating disorder is raised—those with a positive (high risk) result. In clinical practice, a woman identified as positive would be recommended for a clinical diagnostic interview to confirm the diagnosis of an eating disorder. Time and money will be saved by not conducting such an interview with all women. However, the SCOFF questionnaire will not correctly identify the diagnostic status for all women. When the results of the SCOFF questionnaire are compared with those of the diagnostic interview, a "true positive" is a woman who was correctly identified as "positive" by the SCOFF questionnaire because she was subsequently diagnosed with an eating disorder on clinical interview. A "true negative" result is one that was identified as "negative" by the SCOFF questionnaire and not diagnosed as an eating disorder. A "false positive" result is one that was identified as "positive" by the SCOFF questionnaire but not confirmed as an eating disorder by the clinical interview. A "false negative" result is one that was identified as "negative" by the SCOFF questionnaire but diagnosed as an eating disorder by the clinical interview.

Answer *a* is the calculation for the sensitivity of the SCOFF questionnaire as a screening tool for diagnosed eating disorders. Sensitivity is the accuracy of the SCOFF questionnaire at identifying women with diagnosed eating disorders. Of the 13 women in total with a diagnosed eating disorder on clinical interview, 11 (84.6%) had been correctly identified with a positive (high risk) result on the SCOFF questionnaire. The remaining two women were not identified by the SCOFF questionnaire (negative result), so the diagnosis was missed.

Answer *c* is the calculation for the specificity of the SCOFF questionnaire as a screening tool for diagnosed eating disorders. Specificity is the accuracy of the SCOFF questionnaire at identifying women without diagnosed eating disorders. Of the 328 women without a diagnosed eating disorder, 294 (89.6%) had been correctly identified with a negative (low risk) result on the SCOFF questionnaire. The remaining 24 women were incorrectly identified as positive by the SCOFF questionnaire.

Answer *d* is the calculation for the negative predictive value of the SCOFF questionnaire as a screening tool for eating disorders in primary care. The negative predictive value is the proportion, expressed as a percentage, of women identified by the SCOFF

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questionnaire as "negative" who did not have a diagnosed eating disorder. Therefore, the negative predictive value is the accuracy of a negative result on the SCOFF questionnaire. Of the 296 women identified as negative on the SCOFF questionnaire (low risk), 294 (99.3%) were correctly identified—they were subsequently not diagnosed with an eating disorder.

1   Luck AJ, Morgan JF, Reid F, O'Brien A, Brunton J, Price C, et al. The SCOFF questionnaire and clinical interview for eating disorders in general practice: comparative study. *BMJ* 2002;325:755-6.

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