PRACTICE OBSERVED

Simple scale for assessing level of dependency of patients in general practice

JAMES WILLIS

Abstract
A rating scale has been designed for assessing the degree of dependency of patients in general practice. An analysis of the elderly and disabled patients in a two doctor practice is given as an example of its use and simplicity.

Introduction

Many scales for the assessment of disability and social functioning have been described. Powell Lawton and Brody commented on the many existing incompatible scales, while describing two new scales of their own. Scales have been designed for use during the rehabilitation of patients in hospital, for social service departments and local authorities in the evaluation of their facilities for the elderly, for community medicine departments in the measurement of dependency in the community, and several have been designed specifically for use in primary care and general practice.¹⁻⁵

Of the last group, the King's Fund Functional Rating Chart for the Elderly, and the Geriatric Parent Assessment Record adopted by Sanday Pharmaceuticals,⁶ were produced in a form intended for widespread use in general practice. The King's Fund scale was the basis of the new scale described here, which was designed for use in a computerised dependent patient review index for general practice.

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The assessment scale showing the dependency scores for each attribute and an analysis of the 259 patients currently included in the dependent patient review index

Attribute	Score	No.	%
1. Under 75, female sex	1	24	9.3
2. Living with spouse	2	28	10.8
3. Living with partner	3	24	9.3
4. Living with family	4	24	9.3
5. Living with others	5	24	9.3
6. Living alone	6	24	9.3
7. Living with spouse	7	24	9.3
8. Living with partner	8	24	9.3
9. Living with family	9	24	9.3
10. Living with others	10	24	9.3
11. Living alone	11	24	9.3
12. Living with spouse	12	24	9.3
13. Living with partner	13	24	9.3
14. Living with family	14	24	9.3
15. Living with others	15	24	9.3
16. Living alone	16	24	9.3
17. Living with spouse	17	24	9.3
18. Living with partner	18	24	9.3
19. Living with family	19	24	9.3
20. Living with others	20	24	9.3
21. Living alone	21	24	9.3
22. Living with spouse	22	24	9.3
23. Living with partner	23	24	9.3
24. Living with family	24	24	9.3
25. Living with others	25	24	9.3
26. Living alone	26	24	9.3
27. Living with spouse	27	24	9.3
28. Living with partner	28	24	9.3
29. Living with family	29	24	9.3
30. Living with others	30	24	9.3
31. Living alone	31	24	9.3
32. Living with spouse	32	24	9.3
33. Living with partner	33	24	9.3
34. Living with family	34	24	9.3
35. Living with others	35	24	9.3
36. Living alone	36	24	9.3
37. Living with spouse	37	24	9.3
38. Living with partner	38	24	9.3
39. Living with family	39	24	9.3
40. Living with others	40	24	9.3
41. Living alone	41	24	9.3
42. Living with spouse	42	24	9.3
43. Living with partner	43	24	9.3
44. Living with family	44	24	9.3
45. Living with others	45	24	9.3
46. Living alone	46	24	9.3
47. Living with spouse	47	24	9.3
48. Living with partner	48	24	9.3
49. Living with family	49	24	9.3
50. Living with others	50	24	9.3
51. Living alone	51	24	9.3
52. Living with spouse	52	24	9.3
53. Living with partner	53	24	9.3
54. Living with family	54	24	9.3
55. Living with others	55	24	9.3
56. Living alone	56	24	9.3
57. Living with spouse	57	24	9.3
58. Living with partner	58	24	9.3
59. Living with family	59	24	9.3
60. Living with others	60	24	9.3
61. Living alone	61	24	9.3
62. Living with spouse	62	24	9.3
63. Living with partner	63	24	9.3
64. Living with family	64	24	9.3
65. Living with others	65	24	9.3
66. Living alone	66	24	9.3
67. Living with spouse	67	24	9.3
68. Living with partner	68	24	9.3
69. Living with family	69	24	9.3
70. Living with others	70	24	9.3
71. Living alone	71	24	9.3
72. Living with spouse	72	24	9.3
73. Living with partner	73	24	9.3
74. Living with family	74	24	9.3
75. Living with others	75	24	9.3
76. Living alone	76	24	9.3
77. Living with spouse	77	24	9.3
78. Living with partner	78	24	9.3
79. Living with family	79	24	9.3
80. Living with others	80	24	9.3
81. Living alone	81	24	9.3
82. Living with spouse	82	24	9.3
83. Living with partner	83	24	9.3
84. Living with family	84	24	9.3
85. Living with others	85	24	9.3
86. Living alone	86	24	9.3
87. Living with spouse	87	24	9.3
88. Living with partner	88	24	9.3
89. Living with family	89	24	9.3
90. Living with others	90	24	9.3
91. Living alone	91	24	9.3
92. Living with spouse	92	24	9.3
93. Living with partner	93	24	9.3
94. Living with family	94	24	9.3
95. Living with others	95	24	9.3
96. Living alone	96	24	9.3
97. Living with spouse	97	24	9.3
98. Living with partner	98	24	9.3
99. Living with family	99	24	9.3
100. Living with others	100	24	9.3

*There are added to obtain each patient's total dependency score.

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intended to be a catch-all to reflect the doctor's general assessment of the patient. Details of the patient's medical condition are excluded, the scale concentrates on social functioning.

The patient's assessment is given to the computer in the form of a single digit code—a number for each of the attributes. Because the information is stored in this form it can be analysed and retrieved from the index in seconds.

Dependency score

The various dependency factors obviously mean greater or lesser degrees of difficulty for the patient concerned. I have attempted to reflect the degree of adversity of the different attributes by attaching what seem to be appropriate weighting scores. Thus, "chronic mental state" rates 6, whereas "dangerous mental state" rates 15. These scores are unavoidably subjective, they have the same mathematical validity as a set of figures designed to measure the beauty of a sunset. The computer program, however, uses them to calculate a dependency score for each patient which, because it is a simple number and not a complex rating code, produces a relatively objective ranking of the patients in order of dependency. Furthermore, the total practice dependency score and the average are novel indices of practice workload.

The table gives an analysis of those patients in our practice who were included in the dependent patient review index on the date of printing. A report like this is produced by the program whenever the user wishes. It gives the full rating scale and a remainder of the weighting scores attached to each attribute. It also gives the number of patients in each group at the time of printing and the percentage that each represents of the total.

Discussion

Despite the many functional rating scales that have been described, none has come into widespread use in general practice. This may be because they are complex, and any benefits resulting from their use have not justified the effort in applying them. In some respects this scale is simple compared with others but its simplicity makes it easy to use routinely and may more than compensate for its lack of objectivity. (See paper next week.)

Contribution of *Gardnerella vaginalis* to vaginitis in a general practice

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Abstract

In a study of 154 adult women who presented to their general practitioner with vaginal symptoms 30 (20%) had *Gardnerella vaginalis* on its own and 51 (33%) had *G. vaginalis* in combination with anaerobes or known pathogens. Thirty one (20%) patients were culture negative. Those who were culture negative had fewer symptoms and signs of vaginitis than those with *G.*

vaginalis alone or *G. vaginalis* plus anaerobes. Those with known pathogens had more symptoms and signs than those with *G. vaginalis* alone or *G. vaginalis* plus anaerobes. Those with known pathogens plus *G. vaginalis* had the most severe signs and symptoms of vaginitis. It is concluded that *G. vaginalis* can cause vaginitis on its own, and it makes vaginitis worse when present with other organisms. *G. vaginalis* was also found in 30 (21%) of the 138 control patients who, although they presented vaginitis, had worse signs than control patients without *G. vaginalis*. It seems that *G. vaginalis* can occur in a spectrum ranging from the uncomplicated patient to those with severe vaginitis.

Introduction

Since 1955 when Gardner and Dukes reported *Haemophilus vaginalis* (now called *Gardnerella vaginalis*) as a cause of non-specific vaginitis it has been isolated mainly from genitourinary, student, and family planning clinics, with wide variations in the prevalence of the organism in patients attending these clinics. There is a

continuing controversy about its importance as a pathogen¹ and its ability to cause vaginitis. There have been no reports of its prevalence in a general practice population.

The aims of this study were (i) to identify the prevalence of *Gardnerella vaginalis* among women who presented with vaginal symptoms in general practice; (ii) to identify the prevalence of the organism among asymptomatic women controls; (iii) to test the hypotheses that (a) *G. vaginalis* on its own is a vaginal pathogen and (b) if present with other known pathogens (yeasts, *Trichomonas*, anaerobes, *Escherichia coli*, *Klebsiella*, herpes) makes vaginal symptoms worse.

Method

The study was carried out in the department of general practice, which serves a population mainly belonging to social class III to V according to the Registrar General's classification. There were 2609 women over 16 years of age registered with the practice in 1983. Women who were not pregnant who presented to their doctor with a history of vaginal discharge, soreness, or irritation, hereafter called vaginal symptoms, during the 12 months from January to December 1983 were included in the study. Patients were requested by their doctor to use the research form. These women asked a set of standard questions about the duration and severity of symptoms and about the use of contraceptive and antibiotics. She then carried out a vaginal examination and recorded the amount, colour, and type of discharge, and the degree of soreness on vaginal examination, measured the vaginal pH using Dienes's strips, Mächters-Nagel,² and performed the amine test.

High vaginal or cervical swabs were taken and cultured for (*Gardnerella vaginalis*, *Neisseria gonorrhoeae*, herpesvirus type 2, *G. vaginalis*, and anaerobes). Wet mount preparations were prepared for immediate microscopic diagnosis of *G. vaginalis* and "wet cells". By the practice laboratory technician. The vaginal swab from the cervix was placed in chlamydia transport medium and refrigerated at 4°C until ready for inoculation into McCoy cells at the laboratory. A cervical swab and a swab from leucocytes present was obtained, placed in virus transport medium, and stored at 4°C until cultured by the laboratory. All specimens were transported to the Public Health Laboratory Service daily.

Culture and identification of pathogens were performed by standard techniques. *G. vaginalis* was defined by (i) Gram variable, oxidizable, in producing two colonies after 48 hours incubation, (ii) causing haemolysis on human blood agar, (iii) hydrolysis of hippurate, and (iv) being resistant to sulphonamide and 5 µg metronidazole discs but sensitive to 50 µg metronidazole discs with one discrepant result from in 10% allowed.

Asymptomatic women from the same general practice who presented during the study to the sister for cervical smears or family planning checks were recruited as controls. A single high vaginal swab was taken, and the presence or absence of vaginal discharge and vaginitis was noted. The swab was placed in Stuart's medium at 4°C and transferred to the laboratory for culture of *G. vaginalis* and yeasts. Microscopic examination was performed for *Trichomonas*.

Statistical comparisons were made by a χ^2 throughout.

Results

During the 12 month study period 210 women presented with vaginal symptoms, and 154 were included in the study. No women included because eight had proved urinary infection to account for their symptoms, in some presented on Friday afternoon when early transfer of specimens to the laboratory was not possible, in the doctor either forgot to refer or considered that patients needed immediate treatment or the research sister was on holiday. Retrospective analysis of the medical records of included patients showed that they did not differ noticeably from study patients in respect of age and severity of character of symptoms.

Table I lists the organisms that were isolated from patients. *G. vaginalis* was isolated in 81 (51%) patients, alone in 30, with anaerobes in 26 (17%), and with other organisms in 25 (16%). Other micro-organisms, yeasts, *Trichomonas*, anaerobes, *E. coli*, *Klebsiella*, herpes were recovered from 42 (27%) patients, and these are hereafter referred to as known pathogens. *Neisseria gonorrhoeae* was not isolated. Thirty one (20%) patients grew no vaginal pathogens and are hereafter referred to as culture negative patients. Table I also lists the organisms recovered from 138 asymptomatic control patients.

Figure 1 shows the relations between the three common presenting

symptoms (soreness, irritation, and discharge) and results of the laboratory isolations. Patients who were culture negative reported the fewest symptoms, and those with *G. vaginalis* alone or *G. vaginalis* plus anaerobes reported more. Vaginitis patients with known pathogens reported more symptoms again. Seven patients with anaerobes only were included in this group because separate analysis showed that they had a similar pattern of symptoms and those with *G. vaginalis* plus known pathogens reported the most. This gradation of symptom frequency in patients from culture negative to *G. vaginalis* plus known pathogens was highly significant: analysed as a 3 x 5 table one, two, or three symptoms + negative, *G. vaginalis*, known pathogens, anaerobes plus *G. vaginalis*, and known pathogens plus *G. vaginalis*; $\chi^2 = 38$, $p < 0.001$.

TABLE I—Organisms isolated from 154 patients with vaginitis and 138 asymptomatic control patients: the percentage in the doctor

	No. of patients	% of control patients
<i>Gardnerella vaginalis</i> alone	30	24.17
<i>G. vaginalis</i> + anaerobes	26	17.4
<i>G. vaginalis</i> + known pathogens	25	18.1
Yeasts	14	10.1
<i>Trichomonas</i>	12	8.7
Herpes	1	0.7
Anaerobes	1	0.7
Known pathogens	1	0.7
Yeasts	10	7.3
<i>Trichomonas</i>	2	1.5
Anaerobes	1	0.7
<i>E. coli</i> (but not)	1	0.7
<i>Neisseria gonorrhoeae</i>	1	0.7
Culture negative	31	20.2
Total	154	100

FIG. 1—Number of vaginal symptoms in 154 patients and 138 control patients who presented to the general practitioner.

TABLE II—Symptoms on vaginal examination in 154 patients presenting to the general practitioner with vaginal symptoms: percentage in patients

	Culture negative	<i>G. vaginalis</i> alone	<i>G. vaginalis</i> + anaerobes	<i>G. vaginalis</i> + known pathogens	Known pathogens
Soreness on touch	27.87	21.77	16.42	6.24	21.55
Yes	4	11	23	10	19

$\chi^2 = 27.2$, $p < 0.001$

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Table II compares soreness on vaginal examination with laboratory findings. The culture negative group had the least degree of soreness, those with *G. vaginalis* alone had the least, those with anaerobes plus *G. vaginalis* had more, and those with known pathogens plus *G. vaginalis* had the most. Patients with *G. vaginalis* and known pathogens alone had significantly more soreness than those with known pathogens alone or those with *G. vaginalis* alone.

Table III compares discomfort related to intercourse with laboratory findings. It follows a similar pattern to soreness on vaginal examination with the culture negative group having the least discomfort and those with *G. vaginalis* plus anaerobes having more discomfort than those with *G. vaginalis* alone. Those with *G. vaginalis* plus known pathogens had significantly more discomfort than those with known pathogens alone.

Figure 2 shows the amount of discharge for the control patients and patients. Even among the control patients some who were *G. vaginalis* positive showed a discharge, whereas over half of those with *G. vaginalis* alone produced a discharge, and over three quarters of those with *G. vaginalis* plus anaerobes produced a discharge. Similarly, more women with *G. vaginalis* plus known pathogens produced a discharge than women with known pathogens only.

FIG. 2—Amount of discharge in 154 patients with vaginitis and 138 control patients who presented to the general practitioner.

TABLE III—Discomfort related to intercourse among 142 sexually active patients presenting to their general practitioner with vaginal symptoms (percentage in patients)

	Culture negative	<i>G. vaginalis</i> alone	<i>G. vaginalis</i> + anaerobes	<i>G. vaginalis</i> + known pathogens	Known pathogens
No discomfort on intercourse	25.99	20.71	16.64	8.52	20.54
Yes (unpleasant)	21.77	8.29	9.36	17.68	17.68

$\chi^2 = 22.5$, $p < 0.001$

Discussion

The prevalence of *G. vaginalis* in this study in both patients and control patients was unusually high. The organism has not been studied in general practice populations and has been reported only from selected populations.¹¹ The numbers of negative cultures from our study were much lower than the 43% reported in a recent study in general practice by Hirschel's group,¹² the larger number of apparently negative results in that study might be explained by the fact that *G. vaginalis* was not looked for.

Much interobserver variability has been shown between two different observers of the amount of discharge.¹³ Although Taylor¹⁴ found a good correlation between doctor and patient on amount of

discharge. In our study, with a single observer, *G. vaginalis* alone or with other organisms was a powerful producer of vaginitis. The pattern of discharge observed (fig 2) is different from the patterns of symptoms reported (fig 1) or observed signs (tables II and III). *G. vaginalis* plus anaerobes produced the most discharge but *G. vaginalis* plus known pathogens caused the most symptoms and signs of vaginitis. This mismatch between the amount of discharge observed and symptoms and signs has led to the deprecating term "vaginitis" (discharge without vaginitis). As the discharge smells vile, many sufferers are more troubled by the discharge than by the vaginitis, whereas the converse may apply to the attending clinician.

It is difficult to decide on appearance whether a vaginal mucosa is inflamed or not. We relied on a single observer throughout our study, and the report of discomfort related to intercourse and of tenderness on vaginal examination are objective evidence of vaginal inflammation. Furthermore, the symptom (discomfort on intercourse, table II) and the sign (tenderness on vaginal examination, table III) both follow a similar pattern to the presenting symptoms of soreness, irritation, and discharge and thereby provide internal validation.

It is generally accepted that *G. vaginalis* plus anaerobes cause a vaginitis; yet in our study the pattern of presenting symptoms in the group with *G. vaginalis* alone was similar to that in the group with *G. vaginalis* plus anaerobes. When the two groups, known pathogens and known pathogens plus *G. vaginalis*, are compared the frequency and severity of reported symptoms is significantly greater in the latter group. These findings are at variance with the notion that *G. vaginalis* on its own causes a vaginitis (discharge but no vaginitis) and support our hypotheses that *G. vaginalis* on its own may cause a vaginitis and when present with known pathogens contributes to the degree of vaginitis.

There is a spectrum of vaginal symptoms and signs ranging from clinically mild to severe. It seems that *G. vaginalis* may be present at any point within that spectrum (either alone or in combination with other pathogens), but at whatever point it occurs in that spectrum it adds to the symptoms. If *G. vaginalis* contributes as much to vaginitis in patients in other practices as it does in ours then doctors will have to broaden their diagnosis and management in dealing with this common condition. Our findings suggest that it is not enough to assume that vaginal symptoms fall into the broad categories of "another attack of thrush" or "non-specific vaginitis."

Twenty two per cent of control patients grew *G. vaginalis* and, though asymptomatic, about half exhibited some tenderness on examination or had increased vaginal discharge. There is also wide variability in the amount of discharge and discomfort women will tolerate before presenting to their doctor, and perhaps some signs (subconsciously) prompted these women to attend for cervical smears or family planning checks.

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References

- Gardner RH, Dukes CD. *Haemophilus vaginalis*: a newly defined species and proposed "genus" *Gardnerella vaginalis*. *Am J Clin Oncol* 1959;20:247-56.
- Taylor TH, Shepherd AL, Butler D, Phillips I. *Gardnerella vaginalis* and vaginal discharge. *Lancet* 1982;1:1374-6.
- Wardlaw GJ, Hirschel CJ. *Gardnerella vaginalis* and anaerobes: the associated bacterium. *Br J Clin Pathol* 1983;36:111-5.
- Wardlaw GJ, Hirschel CJ. *Gardnerella vaginalis* and anaerobes: the associated bacterium. *Br J Clin Pathol* 1983;36:111-5.
- Wardlaw GJ, Hirschel CJ. *Gardnerella vaginalis* and anaerobes: the associated bacterium. *Br J Clin Pathol* 1983;36:111-5.
- Wardlaw GJ, Hirschel CJ. *Gardnerella vaginalis* and anaerobes: the associated bacterium. *Br J Clin Pathol* 1983;36:111-5.
- Wardlaw GJ, Hirschel CJ. *Gardnerella vaginalis* and anaerobes: the associated bacterium. *Br J Clin Pathol* 1983;36:111-5.
- Wardlaw GJ, Hirschel CJ. *Gardnerella vaginalis* and anaerobes: the associated bacterium. *Br J Clin Pathol* 1983;36:111-5.
- Wardlaw GJ, Hirschel CJ. *Gardnerella vaginalis* and anaerobes: the associated bacterium. *Br J Clin Pathol* 1983;36:111-5.
- Wardlaw GJ, Hirschel CJ. *Gardnerella vaginalis* and anaerobes: the associated bacterium. *Br J Clin Pathol* 1983;36:111-5.

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