EUROPEAN JOURNAL OF PUBLIC HEALTH 2003; 13: 361–366

The NorVold Abuse Questionnaire (NorAQ)

Validation of new measures of emotional, physical, and sexual abuse, and abuse in the health care system among women

I.M. KATARINA SWAHNBERG, BARBRO WIJMA *

Background: In the literature about abuse, large variations in prevalence rates exist. Validated research instruments are scarce and are needed urgently. Our aim was to validate the 13 questions concerning the experiences of abuse among women in the NorVold Abuse Questionnaire against an interview and two validated questionnaires. Method: Data collection was in two parts. i) The NorVold Abuse Questionnaire was sent to a random sample of 2000 women in Östergötland. ii) A subsample of 64 women was interviewed, and filled in the Conflict Tactic Scale, the Sexual Abuse Questionnaire, and the NorVold Abuse Questionnaire for a second time. The interview had open questions about abuse and was considered our gold standard. Results: The response rate was 61%. The abuse variables in The NorVold Abuse Questionnaire showed good test–retest reliability (84–95%). Specificity was 98% for all kinds of abuse except physical (85%). Sensitivity ranged from 75% (emotional) to 96% (physical). The likelihood ratio ranged from 38 to 43 for all kinds of abuse except physical (likelihood ratio 6). NorAQ performed better against the interview than against the Sexual Abuse Questionnaire and equally against the Conflict Tactic Scale. High lifetime prevalence rates of abuse were found: emotional 21.4%; physical 36.4%; sexual 16.9%; abuse in the health care 15.6%. Prevalence rates of abuse dropped considerably when a criterion of current suffering was added. Conclusions: The abuse variables in NorAQ have good reliability and validity.

Keywords: abuse, NorAQ, prevalence, reliability, validation, women

The prevalence rates for different kinds of abuse vary widely in population studies, which may harm the credibility of this kind of research and decrease respect for the underlying problem.

The methodologies of studies need to be scrutinized when such differences are evaluated. i) The definitions of abuse vary (the concrete act, age of victim at onset, duration, presence of threat or fear). ii) Some studies present results based on the relationship between victim and perpetrator, while others do not. iii) The character of the sample influences the prevalence rates. iv) Different data collection procedures, e.g. interview versus questionnaire are likely to give different prevalence rates. v) Validated instruments should be used.

Validated research instruments about abuse are scarce, but are required urgently. There are a few instruments that have been validated in USA and Canada.[1–8] This is the first validation study of an instrument in the Nordic countries.

The Nordic research network NorVold constructed the NorVold Abuse Questionnaire (NorAQ), a new measure of emotional, physical, and sexual abuse, and abuse in the health care system. The aim was to use NorAQ among women in five Nordic countries and to be able to compare prevalence rates.

Statistics Sweden tested NorAQ in a minor pilot study at their pre-testing laboratory, which led to some changes in NorAQ's structure and in the formulation of questions.

The present study reports on the application of NorAQ to a random sample of Swedish women. The aim of the study was to investigate the validity and reliability of the abuse questions in NorAQ against an interview and two validated questionnaires.

DEFINITIONS AND ACCURACY OF TEST RESULTS

In the validation of this study, sensitivity is defined as the proportion of women with a background of abuse that is correctly identified by NorAQ, i.e. true positive answers. Specificity is defined as the proportion of women without a background of abuse that is correctly identified as such by NorAQ, i.e. true negative answers. Sensitivity and the specificity are commonly used to demonstrate the pre-test characteristics of a diagnostic test.

How well NorAQ performs after the result of the test is known is illustrated by the post-test probability. There are two kinds of post-test concepts that are commonly used: positive and negative predictive values. Positive predictive value expresses the probability of having a background of abuse when NorAQ is positive for abuse. Negative predictive value is the probability of not having a background of abuse when NorAQ is negative for

* I.M.K. Swahnberg[1], B. Wijma[1]
1 Division of Women's Health, Department of Molecular and Clinical Medicine, Faculty of Health Sciences, Linköping University, Linköping, Sweden
Correspondence: Katarina Swahnberg, R.N PhD, Division of Women's Health, Department of Molecular and Clinical Medicine, Faculty of Health Sciences, Linköping University, S–581 85 Linköping, Sweden,
tel. +46 13 223 169, fax +46 13 148 156, e-mail: katsw@imk.liu.se

abuse.[9] Sensitivity, specificity and prevalence determine the predictive value.[10]

Probabilities are expressed as proportions. The likelihood ratio summarizes the two probabilities sensitivity and specificity and is expressed in odds. The likelihood ratio expresses how many times more (or less) likely it is that a certain test result is found in women with as opposed to without a background of abuse,[10] (very low LR ≤0.1; very high LR ≥10).[11] The advantages of likelihood ratio are that it describes the performance of a test with one figure instead of two (sensitivity and specificity), and is independent of prevalence rates.[10]

METHODS

Procedure and material

The study population was a sample of 2000 women aged 18–64 and living in the county of Östergötland in the southeast of Sweden. The sample had been randomly selected from the Population Register in Linköping. Data collections were performed in three parts.

The first part took place November–December 1999. NorAQ (NorAQ I) and an information letter were sent to a random sample of 1000 women. The women had the opportunity, for every letter received, to actively withdraw from the study by returning a special sheet to the research leader. Prepaid envelopes were used in the correspondence with the participants. Two reminders were sent out.

The second part of the data collection took place during April–June 2000. The participating women (*n*=590) were divided into two groups: women with and without a background of any kind of abuse. Within these two groups an equal number of women were selected at random, and those women who lived in the urban area of Linköping were invited to the validation session by the first author (*n*=118). Seventy-two women accepted, and 64 women came to the interview (33 with and 31 without a history of abuse).

During the validation session participants filled in three questionnaires and then took part in an interview, held at the University Hospital, Linköping, Sweden, and lasting from 45 minutes to 2 hours. The interviewer (the first author) was blind to the women's group affiliations, according to their answers in NorAQ I.

The three questionnaires were NorAQ (for the second time; NorAQ II), Conflict Tactics Scale Form N about physical abuse (CTS),[1] and Sexual Abuse Questionnaire (modified from Badgley's version) (SAQ (author's abbreviation)).[6] The interview had open questions about lifetime experiences of emotional, physical and sexual abuse, and any kind of abuse occurring in the health care system. In this part of the validation procedure, the answers in the interviews were considered as our gold standard and NorAQ II as the diagnostic test.

The reports made in the CTS and the SAQ were regarded only as complementary gold standards.

NorAQ I was compared to NorAQ II to estimate test–retest reliability. The participants were instructed to fill in NorAQ II, as the circumstances were when they completed it for the first time (NorAQ I), 5–7 months earlier. Only one woman reported experience of abuse during the interval between NorAQ I and NorAQ II. Her questionnaire was excluded when reliability was calculated.

In part three of the study the NorAQ was sent to the remaining 1000 women of the original sample, to obtain a better basis for calculating prevalence rates of abuse. A total sample of 1168 was thus obtained. Demographic data from NorAQ I were compared between the population used in the validation (*n*=64) and the complete sample (*n*=1168).

The local ethical committee had approved the study.

Measurement

- NorAQ

NorAQ has eight parts and consists of 80 questions. Part one of the questionnaire has general questions about age, education, main occupation and civil status. In part two, experiences of pregnancy, delivery and contact with gynaecologists are addressed. In part three, 14 questions measure self-estimated health and medical history. The topic of abuse (parts 4–7) is represented by 13 questions divided into four kinds of abuse; emotional, physical, sexual abuse and abuse in the health care system *(figure 1)*.

The content of the questions ranges from mild to severe lifetime abuse, allowing a rough classification of the severity of any abusive act. Women who reported more than one degree of a specific kind of abuse were categorized according to the most severe abusive act. Emotional, physical, and sexual abuse, and abuse in the health care system were defined as having answered yes to one or several of the three/four questions about each kind of abuse in NorAQ.

If a woman had experienced abuse, she was instructed to go on answering more detailed questions, e.g. who the perpetrator was, when the abuse occurred, and if she ever had told anyone about what happened. She was also asked to estimate how much she currently suffered from the abusive experiences. 'Current suffering' was measured on an 11-point scale (0 = no suffering, 10 = suffers terribly). The answers to the suffering variables were dichotomised in the analysis: no suffering (=0) and suffering (1–10). When test–retest reliability was calculated for the current suffering variables, a margin of error of +/– 1 point on the 11-point scale was accepted.

The questionnaire closes with general questions about abuse, such as ever having reported abuse to the police, or fear of becoming a victim of abuse in future (part 8).

- CTS

The original CTS Form A was validated in 1975. The CTS (Form N) used in this study is a revised version. CTS consists of 18 items. Each item measures three aspects of abuse within the family (subscales): i) by respondent during the past 12 months, ii) by husband/partner during the past 12 months, or iii) if violence within the family has ever occurred.[1]

In the present study we used a Swedish translation of the instruction and 17 statements from CTS (eight verbal and

Emotional abuse	
Mild abuse	Have you experienced anybody systematically and for any longer period trying to repress, degrade or humiliate you?
Moderate abuse	Have you experienced anybody systematically and by threat or force trying to limit your contacts with others or totally control what you may and may not do?
Severe abuse	Have you experienced living in fear because somebody systematically and for a longer period has threatened you or somebody close to you?
Physical abuse	
Mild abuse	Have you experienced anybody hitting you, smacking your face or holding you firmly against your will?
Moderate abuse	Have you experienced anybody hitting you with his/her fist(s) or with a hard object, kicking you, pushing you violently, giving you a beating, thrashing you or doing anything similar to you?
Severe abuse	Have you experienced anybody threatening your life by, for instance, trying to strangle you, showing a weapon or knife or by any other similar act?
Sexual abuse	
Mild abuse, no genital contact	Has anybody *against your will* touched parts of your body other than the genitals in a 'sexual way' or forced you to touch other parts of his or her body in a 'sexual way'?
Mild abuse, emotional/ sexual humiliation	Have you in any other way been sexually humiliated; e.g. by being forced to watch a porno movie or similar *against your will,* forced to participate in a porno movie or similar, forced to show your body naked or forced to watch when somebody else showed his/her body naked?
Moderate abuse, genital contact	Has anybody *against your will* touched your genitals, used your body to satisfy him/herself sexually or forced you to touch anybody else's genitals?
Severe abuse, penetration	Has anybody *against your will* put his penis into your vagina, mouth or rectum or tried any of this; put in or tried to put an object or other part of the body into your vagina, mouth or rectum?
Abuse in the health care system	
Mild abuse	Have you ever felt offended or grossly degraded while visiting health services, felt that someone exercised blackmail against you or did not show respect for your opinion – in such a way that you were later disturbed by or suffered from the experience?
Moderate abuse	Have you ever experienced that a 'normal' event, while visiting health services suddenly became a really terrible and insulting experience, without you fully knowing how this could happen?
Severe abuse	Have you experienced anybody in health service purposely – as you understood – hurting you physically or mentally, grossly violating you or using your body to your disadvantage for his/her own purpose?
Answer alternatives (the same for all questions)	
1 = No	
2 = Yes, as a child (<18 years)	
3 = Yes, as an adult (≥18 years)	
4 = Yes, as a child and as an adult	

Figure 1 Questions about abuse in NorAQ

nine physical violence). One verbal statement was left out to reduce the number of questions. We used the subscale spouse/partner violence during the past 12 months and supplemented it with two other subscales: physical abuse by someone else during the past 12 months, and physical abuse by someone ever. A positive answer to any of the nine items on physical violence, in any of the three subscales, defined a background of physical abuse.

CTS does not include questions about current suffering from earlier physical abuse.

- SAQ

Badgley's questionnaire was validated in the version developed by Leserman *et al.* (SAQ).[6] SAQ contains six items including experiences of contact (touch, penetration) and/or non-contact (exhibitionism, threats) sexual abuse in childhood (≤13 years age) and/or in adulthood. In the present study, a Swedish translation of the instruction and all six items was used.

A positive answer to any of the six items defined a background of childhood sexual abuse, and a positive answer to any of the five items defined adult sexual abuse (exhibitionism ≥14 years age was not considered sexual abuse). SAQ does not include current suffering from earlier sexual abuse.

- Interview

The interview started with open questions about abuse. If the respondent declared herself a victim of abuse, i.e. she answered yes to one of the open questions about abuse, more detailed questions were asked to complete her story; e.g. what happened, when, who was the perpetrator?

For the present study answers were analysed only on questions concerning experiences of abuse.

Statistics

The descriptive analyses were done using the statistics program SPSS 10.0 for Windows.

Mann–Whitney Test was performed to evaluate demographic differences between the samples in the different parts of the study. Kappa was calculated according to The Kappa Measure of Agreement for an R×R Table.[12]

RESULTS

Response rates and demographic characteristics of the samples

In the first part of the data collection, 60% (n=590) answered the questionnaire (980 eligible; 11 women not eligible due to language problems, and for nine there was no address available).

In part two, 8/72 women, three with and five without a background of abuse, did not turn up for the appointed interview. No specific patterns in background characteristics were found among the eight women.

In the third part of the data collection, 61% (*n*=578) answered the questionnaire (943 eligible; four women not eligible due to language problems, and for 53 there was no address available). In total 1168 (61%) women were included in the study.

Table 1 presents demographic differences between women answering NorAQ in the total sample (*n*=1168) and the sample used in the validation (*n*=64) *(table 1)*. There were no statistically significant differences in age (mean 41.9 and median 44.0 in the total sample; mean 43.8 and median 46.5 in the validation sample), civil status, parity or main occupation. Women coming for an interview had a higher educational level than women in the total sample. In a further analysis, both samples were divided into two groups, abused and non-abused women. Abused women who came to the interview had a higher educational level than abused women in the total sample. Non-abused interviewed women were older than non-abused women in the total sample. No differences were found in civil status, parity or main occupation.

The internal dropout on the 13 variables on abuse in NorAQ (*n*=1168) was low (0.4–1.6%). The questions about current suffering from a history of abuse had somewhat higher internal dropout rates: emotional abuse 4.0%, physical abuse 5.8%, sexual abuse 7.4% and abuse in the health care system 8.5%. The internal dropout on the five background variables was 0.4–1.1%.

Concurrent validity of NorAQ

The validation concerns the 13 abuse variables in NorAQ *(figure 1)*.

The results are summarized in *table 2*, which presents high rates of sensitivity, specificity, and predictive values with confidence intervals for each kind of abuse in the NorAQ, in comparison with the results from the interview. In terms of likelihood ratios, NorAQ shows good performance, but less so for physical abuse *(table 2)*.

Likelihood ratio was also calculated separately for participants with less than 13 years education and compared with the figures for the total sample. The likelihood ratio within this group was higher for physical abuse (LR 16), sexual abuse (LR E), and abuse in the health care system (LR E), and lower for emotional abuse (LR 14).

NorAQ performed better against the interview (LR 42) than against the SAQ (LR 19) (sexual abuse), and equal against the CTS (LR 6) (physical abuse) *(tables 2 and 3)*. Prevalence rates of lifetime abuse and current suffering from the total sample are presented for each kind of abuse in *table 4*. The prevalence rates of abuse dropped considerably when the criterion of current suffering was added.

Table 1 Distribution of proportions of women with various background characteristics in the interview sample as compared to the total sample (% of women in each sample)

	Total sample % n=1098	Interview sample % n=64
Age (years)		
<20	2.2	4.7
20–34	27.6	14.1
35–49	37.6	48.4
≥50	32.6	32.8
Education*** (years)		
<9	20.7	10.9
10–12	36.2	21.9
≥13	43.1	67.2
Civil status		
Single	19.6	18.8
Partner	80.4	81.3
Parity		
0	25.2	20.3
≥1	74.8	79.7
Occupation		
Employed	69.3	67.2
House-wife	1.5	3.1
Pregnant/parent leave	3.4	4.7
Unemployed	4.9	4.7
Student	11.3	12.5
Sick leave/retir./social supp.[a]	9.3	7.8
Other	0.4	–

Note: All data from NorAQ I.
Statistical significance compared between the two samples; *** p<0.001.
a: Sick leave = on sick leave over a long period; retir. = retired (temporary disability pension, disability pension); social supp. = recipient of social assistance.

Table 2 Validation of the 13 abuse variables in NorAQ with an interview as gold standard (n=64)

Validation concepts (95% confidence interval)	Emotional abuse	Physical abuse	Sexual abuse	Abuse in the health care system	Any abuse
Sensitivity (%)	75 (64–86)	96 (91–101)	83 (74–92)	86 (77–94)	94 (89–100)
Specificity (%)	98 (94–101)	85 (76–94)	98 (94–101)	98 (94–101)	93 (87–99)
Pre-test probability (%) (Prevalence)[a]	38 (26–49)	38 (26–49)	28 (17–39)	22 (12–32)	56 (44–68)
Positive predictive value (%)	95 (89–100)	79 (69–89)	94 (88–100)	92 (86–99)	94 (89–100)
Negative predictive value (%)	87 (78–95)	97 (93–101)	94 (88–100)	96 (91–101)	93 (87–99)
Likelihood ratio	38	6	42	43	13

a: Note: the sample had been selected to constitute two groups of approximately equal size of women with and without a history of any abuse.

Reliability of NorAQ

The test–retest reliability expressed as the proportion of questions that were answered in the same way in NorAQ I and II, ranged from 62% to 100% (61 questions reached above 85%). Seven questions showed identical test–retest results. The 13 abuse variables in NorAQ showed good test–retest reliability (84–95%).

For the questions about current suffering from earlier abuse, the test–retest reliability ranged from 91% to 95%. The kappa measure of agreement are presented in *table 5*.

DISCUSSION

Concurrent validity of NorAQ

The abuse variables in NorAQ have good concurrent validity. NorAQ discriminates well those women who have no experience of any kind of abuse. The specificity of the questionnaire concerning emotional abuse, sexual abuse and abuse in the health care system is 98%. The lower specificity for physical abuse (85%) is probably due to the way that mild physical abuse was defined *(figure 1)*. In NorAQ, 'smacking someone's face' is defined as mild physical abuse. In Sweden, smacking your child did not become an unlawful act until the 1970s. Before that time it was not considered abusive by society or by 'perpetrators'. Therefore women who had been smacked and agreed to that item in NorAQ, might not have considered it as abuse when it was discussed in the interview. The low LR for physical abuse reflects this low specificity.

False negative answers were found concerning emotional abuse (sensitivity: 75%). False negative answers were expected to be more common than false positive answers, because of the intimate atmosphere that might build up in a face-to-face interview, encouraging the respondent to tell more about herself than she wanted to write down in the questionnaire.

The small sample in the interview and the wide confidence intervals indicate uncertainty in the measurement accuracy. Therefore careful interpretation is necessary and replication in large samples is recommended.

There exists no standard for measuring abuse. Interviewing is considered to give the closest estimation of abuse experiences; i.e. to be the gold standard.[6] There have been a few instruments validated in the USA and Canada investigating physical and sexual abuse. Since CTS and SAQ have been validated and are widely used, we wanted to validate NorAQ also against them. However, there exist differences in the conditions during which these three questionnaires were validated: in the cultural context, in the definitions of abuse, in the samples and in the structure of the questionnaires, which makes it very difficult to interpret the results.

In the present study SAQ and CTS were regarded only as complementary to our interviews in terms of gold standard. However, it is satisfying that the results from the validation against SAQ and CTS support the results from the interview.

Questions about emotional abuse and abuse in the health care system were not validated against other instruments

Table 3 Validation of the four sexual abuse and three physical abuse variables in NorAQ with modified versions of the SAQ (sexual abuse) and the CTS (physical abuse) as gold standards (n=64)

Validation concepts (95% confidence interval)	Physical abuse		Sexual abuse	
Sensitivity (%)	86	(77–94)	74	(63–84)
Specificity (%)	86	(78–95)	96	(91–101)
Pre-test probability (%) (Prevalence)[a]	44	(32–56)	30	(18–41)
Positive predictive value (%)	83	(74–92)	88	(79–96)
Negative predictive value (%)	89	(81–96)	90	(82–97)
Likelihood ratio	6		19	

a: Note: the sample had been selected to constitute two groups of approximately equal size of women with and without a history of any abuse.

Table 4 Distribution of women from a randomized Swedish population with experiences of lifetime abuse according to severity (% of all women)

	Emotional abuse	Physical abuse	Sexual abuse	Abuse in the health care system
Mild	7.0	15.4	2.8	4.4
Moderate	4.6	14.2	6.1	7.2
Severe	9.8	6.8	8.0	4.0
Any lifetime abuse	21.4	36.4	16.9	15.6
Suffering from any lifetime abuse	17.0	17.8	11.3	10.1

Table 5 Reliability of the 13 abuse variables in NorAQ measured by kappa (n=63)

	Emotional abuse	Physical abuse	Sexual abuse	Abuse in the health care system
Mild	0.63	0.81	0.72 (Touch) –0.02 (Other)	0.69
Moderate	0.57	0.86	0.77	0.54
Severe	0.74	0.56	0.48	0.31

for practical reasons, e.g. time required for the participants.

High prevalence rates were found for all kinds of abuse. For each kind of abuse, NorAQ includes a question on 'current suffering' from the abusive experience. While the questions about abuse give us the rough prevalence of the occurrence of abusive experiences, adding a criterion for suffering may also provide information about the severity and possible consequences of abuse.

It may be argued that prevalence rates combined with current suffering are of greater clinical relevance, while data concerning occurrence describe the context in which abuse occurs.

Reliability of NorAQ

NorAQ has good test–retest reliability. This does not rule out the possibility of participants giving the same answers by chance. The kappa measure of agreement indicates mainly good reliability for the abuse variables in NorAQ, but the distribution of values between cells is unequal. This is best illustrated in the kappa value for 'other mild sexual abuse'. In spite of the low value, (–0.02), 60/63 women had answered that item in NorAQ in exactly the same (negative) way on the two occasions. Severe abuse in the health care system also had a low kappa value (0.31), while 57/62 women had answered NorAQ negatively on the two occasions.

Response rates and demographic characteristics of the samples

The response rates diminished statistically significantly in population samples; M=68% prior to 1985 and M=49% for more recent surveys.[13] The response rate does not necessarily affect the accuracy of the validation.

In the present study, the response rates were 60–61% in parts one and three.

The main purpose of the study was to validate the NorAQ. Secondly we wanted to estimate the prevalence rates in the study population. Since the sample used in part one was fairly small (n=590) and only half of the original sample randomly selected from the Population Register in Linköping had been used, the second half was added to the study in part three.

The sample used in the validation was representative concerning demographic data for the total sample according to age, civil status, parity and employment. The women who came for the validation session had a higher educational level than women in the total sample. Similarly, abused women who were interviewed had a higher educational level than abused women in the total sample. This is probably related to the selection procedure, as only women living in or close to Linköping, a university city, were invited to the interview for practical reasons.

However, higher Likelihood ratios were calculated for physical and sexual abuse and abuse in the health care system in the group of participants with less than 13 years of education, than in the whole group of participants. Consequently NorAQ performs well in samples with both high and low educational level.

CONCLUSIONS

The abuse variables in NorAQ have good reliability and validity.

The NorVold Abuse Questionnaire (NorAQ) was developed by members in NorVold, a research network established in 1997 to explore the prevalence of violence against women and its effects on women's health. The NorVold research network was supported by grants from the Nordic Minister Council.

Principal investigators: Barbro Wijma, Berit Schei.

Co-ordinator: Katarina Swahnberg.

Local investigators:

Denmark: Katrine Sidenius, Malene Hilden;

Finland: Erja Halmesmäki, Ulla Pikkarinen;

Iceland: Tora Steingrimsdottir;

Norway: Berit Schei, Hildegunn Stoum-Hinsverk, Kristin Offerdal;

Sweden: Barbro Wijma, Katarina Swahnberg.

The authors gratefully acknowledge financial contributions to the study from The Health Research Council in the South-East of Sweden.

We are also most grateful to all the participants who made this study possible, to Dr Drossman, who kindly allowed us to use the Sexual Abuse Questionnaire, modified from Badgley's version, and to MA Straus for accessibility to the CTS.

REFERENCES

1 Straus MA. Measuring intrafamily conflict and violence: the conflict tactics (CT) scales. J Marriage Fam 1979(Feb):75-88.

2 Hudson WW, McIntosh SR. The assessment of spouse abuse: two quantifiable dimensions. J Marriage Fam 1981:873-89.

3 Marshall LL. Development of the severity of violence against women scales. J Fam Violence 1992;7(2):103-19.

4 McFarlane J, Parker B, Soeken K, Bullock L. Assessing for abuse during pregnancy: severity and frequency of injuries and associated entry into prenatal care. JAMA 1992;267(23):3176-8.

5 Sanders B, Becker-Lausen E. The measurement of psychological maltreatment: early data on the child abuse and trauma scale. Child Abuse Neglect 1995;19(3):315-23.

6 Leserman J, Drossman DA, Li Z. The reliability and validity of a sexual and physical abuse history questionnaire in female patients with gastrointestinal disorders. Behav Med 1995;21:141-50.

7 Tolman RM. The validation of the Psychological Maltreatment of Women Inventory. Violence Vict 1999;14(1):25-37.

8 Brown JB, Schmidt G, Lent B, Sas G, Lemelin J. Screening for violence against women: validation and feasibility studies of a French screening tool. Can Fam Physician 2001;47:988-95.

9 Beaglehole R, Bonita R, Kjellström T. Basic epidemiology. Geneva: World Health Organization, 1993.

10 Fletcher RH, Fletcher SW, Wagner EH. Clinical epidemiology: the essentials. 3rd edn. Baltimore: Williams & Wilkins, 1996.

11 Badenoch D. CATmaker Critically Appraised Topics (software tool). Centre for Evidence-Based Medicine, John Radcliffe Hospital, Headington, Oxford, UK OX3 9DU. http://www.jr2.ox.ac.uk/cebm/docs/cats/catabout.html; 2002.

12 Inc S. SPSS Base 9.0. Applications Guide. Chicago: SPSS Inc. 1999.

13 Gorey KM, Leslie DR. The prevalence of child sexual abuse: integrative review adjustment for potential response and measurement biases. Child Abuse Negl 1997;21:391-8.

Received 29 October 2001, accepted 19 July 2002