



# Assessment of the quality and content of website health information about herbal remedies for menopausal symptoms



Julie Sowter<sup>a,\*</sup>, Felicity Astin<sup>b</sup>, Louise Dye<sup>c</sup>, Paul Marshall<sup>d</sup>, Peter Knapp<sup>e</sup>

<sup>a</sup> School of Pharmacy, University of Bradford, UK

<sup>b</sup> School of Human and Health Sciences, University of Huddersfield, UK

<sup>c</sup> School of Psychology, University of Leeds, UK

<sup>d</sup> School of Health, University of Leeds, UK

<sup>e</sup> Dept. of Health Sciences, University of York, UK

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## ABSTRACT

**Objective:** To assess the quality, readability and coverage of website information about herbal remedies for menopausal symptoms.

**Study design:** A purposive sample of commercial and non-commercial websites was assessed for quality (DISCERN), readability (SMOG) and information coverage.

**Main outcome measures:** Non-parametric and parametric tests were used to explain the variability of these factors across types of websites and to assess associations between website quality and information coverage.

**Results:** 39 sites were assessed. Median quality and information coverage scores were 44/80 and 11/30 respectively. The median readability score was 18.7, similar to UK broadsheets. Commercial websites scored significantly lower on quality ( $p = 0.014$ ), but there were no statistical differences for information coverage or readability. There was a significant positive correlation between information quality and coverage scores irrespective of website provider ( $r = 0.69$ ,  $p < 0.001$ ,  $n = 39$ ).

**Conclusion:** Overall website quality and information coverage are poor and the required reading level high.

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## 1. Introduction

The internet is increasingly used as a source of health information [1]. Searches for health information are the third most popular online activity [2] and 52% of European adults have searched online for health information [3]. It allows inexpensive, wide dissemination, enabling people to access information when needed [4]. The internet allows anonymity, useful for some topics [5], but can also be interactive and facilitate ‘communities’ of people with similar health conditions [6]. These qualities should make it an ideal tool for women who want to access information about herbal products to alleviate menopausal symptoms.

The website provider can influence health information quality, with commercial websites having poorer quality information about herbal remedies [7] and the menopause [8]. Although the quality of online information has been evaluated for a range of

conditions [9,10] there have been no studies into the quality and content of websites on herbal remedies for menopausal symptoms. The objectives of this study were to assess the quality and coverage of website information; to compare commercial and non-commercial providers; and assess how well the information fits with what women want.

## 2. Methods

### 2.1. Design

The study used a cross-sectional survey to include commercial and non-commercial sites (i.e. both government-originated and charity-originated sites).

### 2.2. Search strategy

A purposive sample of websites was generated by including sites and search terms recommended by women participants and health service providers in an earlier study [11]. Appendix A pro-

\* Corresponding author.

E-mail address: [j.r.sowter@bradford.ac.uk](mailto:j.r.sowter@bradford.ac.uk) (J. Sowter).

vides details of these search terms and websites. The Search terms were employed to conduct a series of searches using Google; the most frequently used search engine in the UK [12] and the sample was taken from the first results page, mimicking typical browsing [13].

Inclusion criteria were websites with information about herbal remedies as a treatment option for menopausal symptoms; whose key purpose was providing treatment information and from any country of origin which used the English language. Websites were excluded if they only provided information about menopausal symptoms and not treatment; sold products and contained no additional information; provided information solely about one product; acted exclusively as a portal to other sites; required registration or membership to access information; only published research papers and books; were solely news or blog sites; were no longer active; or were sponsored sites, as they tend to be ignored [14].

Sampling was undertaken on 21st January 2013. Fig. 1 illustrates how the final sample of 39 websites was obtained.

Website affiliation was determined from the URL and website information. All links were explored for information about herbal products for menopausal symptoms but links to other websites were not followed.

### 2.3. Measures

Three measures were used: the DISCERN tool for quality [15], criteria [11] for information coverage and the SMOG readability tool. [16]

DISCERN assesses the quality of written information on health-related treatment choices [17]. It comprises a 16 item questionnaire, each rated 1–5 [18]. DISCERN is a validated tool [15], has adequate internal consistency (Alpha = 0.777) and satisfactory inter-rater reliability [19].

The tool for measuring information coverage was based on information needs identified in an earlier study involving 4 focus groups with menopausal women [11], Table 1 provides details of their identified needs with examples of information searched for and how this informed items in the information coverage tool. The resultant tool comprises 6 questions, each rated 1–5 (see Appendix B).

SMOG [16] was used to assess the complexity of text using two indicators: polysyllabic words and sentence length. It is the most frequently used readability test [20], sampling up to 30 sentences (approximately 300 words) from a document. A SMOG score of 11–12 equates to Level 1 in the UK National Adult Literacy Standards [21], the level at which 43% of UK adults can read [22].

### 2.4. Data collection

Websites were scored by one researcher (JS). The SMOG tool was applied to three text samples from three key content areas for each website and the average score calculated. SMOG readability scores were calculated using the National Institute of Adult Continuing Education calculator (NIACE).

### 2.5. Data analysis

The DISCERN, information coverage and SMOG scores were compared for three website provider types (government, non-profit organisation and commercial) using the Kruskal-Wallis statistic. Pearson's product moment correlation coefficients assessed the relationship between DISCERN and information coverage scores for each website type. The medians, quartiles and outliers were plotted according to website provider types for each question in the DISCERN and information coverage tools, to iden-

tify high and low scoring websites for each item. SPSS v19 [23] was used for the analysis.

## 3. Results

### 3.1. Distribution of types of website provider

Most websites returned from searches were for commercial providers; 15 government, 13 non-profit and 106 commercial sites were eligible for inclusion, see Fig. 2.

### 3.2. Ranking of individual websites

Median scores for all websites ( $n=39$ ) were 44/80 for quality (DISCERN), 11/30 for coverage and 18.7 for readability (SMOG), a similar level to UK broadsheet newspapers (see Table 2).

### 3.3. Information quality by type of website provider

A Kruskal-Wallis test revealed no difference between website provider types in SMOG scores ( $\chi^2=2.255$ ,  $df=2$ ,  $p=0.324$ ) or information coverage ( $\chi^2=1.018$ ,  $df=2$ ,  $p=0.601$ ). Scores were different for the DISCERN tool, although they did not reach statistical significance ( $\chi^2=5.854$ ,  $df=2$ ,  $p=0.054$ ). A Mann-Whitney  $U$  test comparing the government and non-profit websites on DISCERN revealed no significant difference ( $p=0.797$ ), therefore the two groups were combined to a single non-commercial provider group. A Mann-Whitney  $U$  test comparing non-commercial and commercial providers revealed a statistically significant difference between the two provider types on DISCERN (median scores 36 and 53,  $p=0.014$ ), such that commercial website providers scored lower.

There was a significant positive correlation between the DISCERN scores and information coverage scores for all website providers ( $r=0.69$ ,  $p<0.001$ ,  $n=39$ ). When correlations were calculated according to provider type, there were positive correlations for the non-profit and commercial sites ( $r=0.902$ ,  $p<0.001$ ,  $n=9$ , and  $r=-0.684$ ,  $p<0.001$ ,  $n=25$ ) respectively. There was a large correlation for the government websites ( $r=0.842$ ). This was not statistically significant ( $p=0.073$ ), although there were only 5 websites of this type.

### 3.4. Analysis of websites for information quality

Section 1 of the tool (questions 1–8) assessed website reliability. Only four (of 39) websites received the maximum score of 5 for the aims being clear: three were commercial sites ([patient.co.uk](http://patient.co.uk), menopause matters, natural health practice) and one non-commercial ([healthtalkonline](http://healthtalkonline.com)). Sites were scored lower for relevance if there was little or no information about herbal remedies. For questions 4 and 5, 29 (74%) and 27 (69%) of websites received a score of 3 or below, indicating only partial or no information about sources of information used and date of production. Commercial sites had the lowest median score for question 6, which checked that information was balanced and unbiased. This tended to be due to the promotion of particular products or treatment approaches.

Section 2 of the tool (questions 9–15) assessed information quality on treatment choices. Question 9 assessed whether there was an explanation for how treatments worked and scored relatively low overall. There was information about the indications for treatments but limited information about the mode of action. Government sites received the lowest mean score for question 12, which asked whether there was information about what happened if no treatment was used, although this question was difficult to score as the menopause is a symptomatic stage of life rather than

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