PATIENT INFORMATION

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The quality and suitability of written educational materials for patients*

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The quality and suitability of written educational materials for patients

Aim. In this study, the quality and suitability of written educational materials being used for the education of patients in surgical departments of hospitals were studied.

Background. In the literature, it is stated that most of the educational materials for patients are not suitable from the aspects of contents, structure, design, composition and language.

Method. In this descriptive type study, which was carried out between March and May 2006, 59 examples of written educational material used for patient education at 138 surgical clinics were evaluated for quality and suitability. The written educational materials obtained were evaluated independently by researchers from the aspect of quality and suitability. The DISCERN measuring instrument was used in the evaluation of the reliability of the written educational materials and the Evaluation of the Suitability of Written Materials form was used in the evaluation of suitability.

Results. It was determined that the educational materials received low scores for reliability and information quality. It was determined that the total scores for the written educational materials were average for suitability.

Conclusion. It was determined that there were no written educational materials in more than half of the surgical units included in the study. It was also found that the educational materials had serious deficiencies.

Relevance to clinical practice. This study showed that there was no adequate written patient educational material at the clinics. This deficiency in written educational materials could be eliminated by having them prepared by health professionals in accordance with guidebooks and taking the target group into account.

Key words: DISCERN, educational booklet, nurses, patient education, quality, suitability, written educational material

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Introduction

Patient education has an important place in health care (Nolan *et al.* 2001, Singh 2003). It is known that patients given education experience less anxiety, are better prepared for the consultations of health professionals, take an active role in decision making and the patient outcomes are more positive (Charnock *et al.* 1999, Coudeyre *et al.* 2002, Hoffmann & Worrall 2004, Blay & Donoghue 2006). Patient education is given in two forms, written and verbal (Scott 2004). Verbal education could have negative aspects: it could easily be forgotten and the real message may not be grasped (Moult *et al.* 2004, Scott 2004). It is known that, when education is given with written materials, the anxiety of the patients, the extent of nausea and vomiting, postoperative complications, the use of medications and the period of staying in hospital are decreased (Gokdogan *et al.* 2003a,b). It also facilitates patients' coping with their situation (Hoffmann & Worrall 2004, Scott 2004). Rather than using educational materials alone, it is considered better to give the written educational materials to the patients with the objective of permanent and recallable information after verbal communication and education (Secker 1997, Hoffmann & Worrall 2004, Scott 2004).

Background

Today, the need for written materials in the education of patients is increasing because the patients are requesting more information about their own health and treatments (Charnock *et al.* 1999, Coates 1999, Schrieber & Colley 2004). The scarcity of nurses has also led to their setting aside less time for the education of patients. Consequently, this results in the adoption and greater use of written materials in the education of patients (Bernier 1993, Nolan *et al.* 2001, Griffin *et al.* 2003).

Written educational material for patients is used with the objective of increasing awareness and providing information, of changing behaviours and beliefs, of continuing the healthy lifestyle behaviours of the individuals and providing conformance to new health situations (Bull *et al.* 2001, Schrieber & Colley 2004). Consequently, the information given in patient educational materials should be readable and understandable (Singh 2003); it should be based on scientific foundations and should be realistic and current (Charnock *et al.* 1999, Rees *et al.* 2002, Gokdogan *et al.* 2003a,b, Griffin *et al.* 2003). When written material used in patient education is evaluated, most of it is not suitable from the aspects of contents, structure, design, composition and language. It is written at an inappropriate level without taking into consideration the age of the reader (Gokdogan *et al.* 2003a,b). Scott (2004) stated that the patients considered the education given to them to be complicated, insufficient and contradictory. This situation can both make it difficult for the patients to understand and it can also limit the value of the educational material (Gokdogan *et al.* 2003a,b). In this study, the quality and suitability of written educational material used in the education of patients in hospital was studied.

Materials and methods

In this descriptive study, 59 examples of written educational material used for the education of patients was evaluated from the aspect of quality and suitability. Researchers visited 22 hospitals between 20 March and 18 May 2006. Two were university hospitals, nine were hospitals under the Ministry of Health and 11 were private hospitals. The researchers gathered one sample each of the written educational materials being used for educating the patients in the surgical departments. No sampling selection was made. All of the written educational materials being used were included in the study. It was determined that 59 written educational materials were used. Eighteen of these were booklets, 25 were brochures and 16 were single page (dimensions of A4 and A4/2) documents. They were being used for the education of patients at the 138 surgical clinics where the study was made at the aforementioned dates. All of the material was related to surgical procedures. The distribution of the written

Table 1 The distribution of written educational materials according to their subjects and the institutions where they are used

Written educational materials	Number	Percentage (%)
University hospital	27	45·8
Private hospital	26	44·1
Ministry of Health hospital	6	10·1
Total	59	100
Orthopaedics and traumatology	12	20·3
General surgery	8	13·6
Cardiovascular surgery	7	11·9
Ophthalmology	7	11·9
Urology	5	8·4
Otorhinolaryngology	5	8·4
Gynaecology	4	6·8
Neurosurgery	3	5·1
Wound treatment	3	5·1
Organ transplantation	2	3·4
Paediatric surgery	1	1·7
Anaesthesia	1	1·7
Pain	1	1·7
Total	59	100

educational materials obtained is given in Table 1 according to their subjects and the institutions where they are used.

Three researchers independently evaluated one of each sample of the written educational material obtained from the aspect of quality and suitability. The DISCERN measuring instrument was used to evaluate the quality of the written educational materials (Charnock *et al.* 1999). The DISCERN (Quality Criteria for Consumer Health Information) measuring instrument was developed by Charnock *et al.* (1999) and translated into Turkish by Gokdogan *et al.* (2003a); it is a rapid, valid and reliable measuring instrument for the evaluation of patient information. It is not dependent on expert knowledge for the conditions or the specified treatment choices (Godolphin *et al.* 2001). This measuring instrument is composed of three parts and 16 questions. In the first part (eight questions) there is an evaluation of whether or not the booklet is reliable. In the second part (seven questions) there is an evaluation of the information quality on the subject of treatment choices. In the third and final part (one question) there is a general evaluation about the booklet. The reliability and quality of information is evaluated with a five-point Likert-type scale on the first 15 questions (1 = no, 3 = partially, 5 = yes). If these items are marked with (1), then it means that the quality is low. If they are marked with (3), then it means that the quality is average. If they are marked with (5), then it means that the quality is high. Points given to the first 15 questions are added together and a grade point between 15–75 is obtained. A total of 15 points indicates that the quality of the educational booklet is low and a total of 75 points indicates that the quality of the educational booklet is high. The sixteenth question, which is in the third part of the scale, evaluates the general quality of the material. The lowest point that a written educational material, which is evaluated with the five-point Likert-type scale, can receive from the general evaluation is 1 and the highest point is 5 (1 = low, 3 = medium, 5 = high).

The Evaluation of the Suitability of Written Materials form, which was developed by Doak *et al.* (1995) and used by Gokdogan *et al.* (2003b) in Turkey, was used in the evaluation of the suitability of written materials. This form is composed of six sub-qualities and a total of 27 questions. There are four questions about content, five questions about literacy, five questions about pictures and graphs, eight questions about plan and type, three questions about learning and motivation and two questions about cultural suitability. For the suitability of items, 1-point was given for yes and 0 points were given for no. The total points that an educational material could receive from this form are a minimum of 1 and a maximum of 27. As the total points increase, the degree of suitability increases, taking reverse scored questions into account.

The brochures and single page educational materials were evaluated with the Evaluation of the Suitability of Written Materials form. The booklets were evaluated both with the DISCERN measuring instrument and the Evaluation of the Suitability of Written Materials form.

The Statistical Program for Social Sciences for Windows 11·0 (SPSS Inc., Chicago, IL, USA) was used in the evaluation of the research data. The mean, standard deviation, minimum and maximum points were calculated.

The necessary permissions for carrying out the study were obtained from Charnock (Oxford University, University Lecturer Division of Public Health and Primary Care) who developed the DISCERN measuring instrument, from Gokdogan who adapted the DISCERN measuring instrument into Turkish, from the Chief Physician's Office and the Nursing Services of the hospitals where the study was carried out in Izmir Province and from the Ethics Committee of the Ege University, School of Nursing.

Findings

It was determined that a total of 59 written educational materials, of which 18 were booklets, 25 were brochures and 16 were single page (dimensions of A4 and A4/A2) documents, were used in a total of 138 surgical clinics at 22 hospitals.

When the educational booklets were evaluated with the DISCERN measuring instrument (Table 2), it was observed that they received a mean score of 2·77 (SD 0·59) (low) points on the reliability part. It was also found that the mean score of the information quality was 2·88 (SD 0·73) (low). It was determined that the general quality of the booklets, based on all of the reliability and information quality questions, was 3·02 (medium quality).

When the total score of the educational booklets were examined with the DISCERN measuring instrument, it was determined that they received 42·5 (SD 8·1) (close to medium level) points for reliability, information quality and general quality (Table 3).

The suitability of the written educational materials was evaluated: the contents part received a mean score of 0·87 (SD 0·58). The literacy part received a mean score of 1·46 (SD 0·36). The picture and graph part received a mean score of 1·01 (SD 1·04). The plan and type part received a mean score of 1·25 (SD 0·42). The learning and motivation part received a mean score of 1·23 (SD 1·15). The cultural suitability part received a mean score of 2·00 (SD 1·01). When the total points for suitability of the written educational materials

Table 2 The distribution of educational booklets according to the DISCERN measuring instrument points

DISCERN measuring instrument	Mean ± SD	Min.	Max.
Reliability			
1 Are the aims clear?	3·50 ± 1·74	1	5
2 Does it achieve its aims?*	3·07 ± 2·27	0	5
3 Is it relevant?	4·72 ± 0·3	3·6	5
4 Is it clear what sources of information were used to compile the publication (Other than the author or producer)?	1·14 ± 0·4	1	2·3
5 Is it clear when the information used or reported in the publication was produced?	1·07 ± 0·3	1	2·3
6 Is it balanced and unbiased?	3·87 ± 1·1	1	5
7 Does it provide details of additional sources of support and information?	2·40 ± 0·8	1	5
8 Does it refer to areas of uncertainty?	2·40 ± 1·3	1	5
Total	2·77 ± 0·58	1·80	3·60
Information Quality			
9 Does it describe how each treatment works?	4·22 ± 0·7	2·3	5
10 Does it describe the benefits of each treatment?	3·42 ± 1·2	1	5
11 Does it describe the risks of each treatment?	2·92 ± 1·2	1	4·6
12 Does it describe what would happen if no treatment is used?	2·40 ± 1·2	1	4·6
13 Does it describe how the treatment choices affect overall quality of life?	2·88 ± 1·1	1	4·6
14 Is it clear that there may be more than one possible treatment choice?	2·40 ± 0·8	1	3·6
15 Does it provide support for shared decision-making?	1·98 ± 0·8	1	3·6
Total	2·88 ± 0·73	1·80	4·0
16 Based on the answers to all of the above questions, rate the overall quality of the publication as a source of information about treatment choices.	3·02 ± 0·8	1	4·7

*As this question was omitted in the written educational materials without an aim, it received '0' points.

Table 3 The total DISCERN points of the booklets

DISCERN parts	Mean ± SD	Min.	Max.
Reliability (8–40 points)	22·2 ± 4·6	14·3	28·7
Information Quality (7–35 points)	20·7 ± 5·0	12·3	27·7
General Quality (1–5 points)	3·0 ± 0·9	1	4·7
Total (15–75 points)	42·5 ± 8·1	27	55

were examined, it was observed that they received a score of 13·22 (SD 4·33) (Table 4).

Discussion

Patient education can enhance patients' feelings of confidence and control, help build a partnership between the patient and health professional and enable patients to participate actively in their care (Griffin *et al.* 2003, Hoffmann & Worrall 2004, McKenna & Scott 2007). Written materials enable patients to learn at their own pace, absorb information over time and share information with significant others (Bernier 1993, McKenna & Scott 2007). The use of written educational materials is also considered to be a cost-effective and a time-efficient method of giving health messages (Bernier 1993, Nolan *et al.* 2001, Griffin *et al.* 2003). These materials can only be effective if they can be read, understood and remembered by patients (Hoffmann & Worrall 2004, McKenna & Scott 2007). There are also other features of written materials such as sentence structure, organization of ideas, design and presentation that can contribute to how well the reader will understand the subject (McKenna & Scott 2007). For this reason, when preparing written education materials, health professionals should take into consideration proposals recommended by literature (for example based on the criteria used in the DISCERN tool) to improve the usefulness of their products (Godolphin *et al.* 2001, Gokdogan *et al.* 2003b, Griffin *et al.* 2003, Hoffmann & Worrall 2004).

It was determined that 59 written educational materials are used in the 138 surgical clinics at the 22 hospitals taken into the scope of the study. Smith *et al.* (1998), examined the readability and accuracy of brochures prepared for asthma patients, and obtained 168 different brochures from 49 centres. Our ratios were found to be very low compared with the ratios of Smith *et al.* (1998). Written patient educational materials are not used at a majority of the surgical clinics included within our study. Nolan *et al.* (2001) also stated that sufficient importance is not placed on patient education, which has an important place in nursing. Walsh and Shaw (2000) stated that the formation of written educational materials is not a duty on its own, but it is a routine part of the nursing activities and that the written educational

Table 4 Evaluation of the suitability of written educational materials

	Mean	Min.	Max.
A Contents (Items 1–4)	0·87 ± 0·58	0	2
1 Can the aim of the material be understood easily?	1·20 ± 0·9	0	3
2 Is the content open to behaviour unique to problem solving?	1·08 ± 0·7	0	3
3 Is the subject limited to the targets?	0·69 ± 0·5	0	2
4 Is there a summary or criticism related to the key points?	0·51 ± 0·5	0	2
B Literacy (Items 5–9)	1·46 ± 0·36	0·40	2
5 Have the materials been written at a readable level?	2·10 ± 0·8	0	3
6 Have the materials been written in a conversational manner?	1·98 ± 0·9	0	3
7 Have clear and frequently used words been used in the material instead of medical terms?	2·44 ± 0·7	0	3
8 Has the structure been given prior to new information?	0·49 ± 0·5	0	2
9 Is the organization advanced?	0·31 ± 0·6	0	3
C Pictures and Graphs (Items 10–14)	1·01 ± 1·04	0	3
10 Are the Graphs, Pictures and Tables interesting? Do they convey the desired message?	1·22 ± 1·3	0	3
11 Are the pictures simple, realistic and interesting?	1·25 ± 1·3	0	3
12 Do the pictures explain the key points visually?	0·39 ± 0·8	0	3
13 Has an explanation been made in the text next to all of the graphs?	1·07 ± 1·2	0	3
14 Has a headline title been used for the announcement/explanatory graphs and pictures?	1·12 ± 1·2	0	3
D Plan and Type (Items 15–22)	1·25 ± 0·42	0·40	2·1
15 Are the pictures next to the related text?	1·51 ± 1·4	0	3
16 Are there clues, such as arrows or boxes, for showing the key information?	0·59 ± 0·8	0	3
17 Is there sufficient blank space?	1·93 ± 0·9	0	3
18 Does the material look disordered?	2·02 ± 0·8	0	3
19 Is there contrast between the paper and ink?	2·51 ± 0·9	0	3
20 Have more than six font types or font sizes been used on the same page?	0·69 ± 0·5	0	2
21 Have they all been written in capital letters?	0·20 ± 0·5	0	3
22 Are the sub-titles more than five to seven sub-titles?	0·51 ± 0·7	0	2
E Learning and Motivation (Items 23–25)	1·23 ± 1·15	0	3
23 Is there an interaction between the texts and graphs?	1·15 ± 1·2	0	3
24 Has the desired behaviour been shown with special terms or models?	1·12 ± 1·2	0	3
25 Is the behaviour implementable?	1·44 ± 1·1	0	3
F Cultural Suitability (Items 26, 27)	2·00 ± 1·01	0	3
26 Do the language, logic and lifestyles show suitability to the society?	2·10 ± 0·9	0	3
27 Are the cultural images positive, realistic and suitable?	1·90 ± 1·1	0	3
Total (0–27 points)	13·22 ± 4·33	6	21·30

materials, as applications based on evidence, would reflect on the nursing profession.

When the educational materials were evaluated with the DISCERN measuring instrument, it was found that the mean reliability was low and that the mean information quality was low. In other words, it was found that the materials have serious deficiencies. When the written educational materials were evaluated in general, it was determined that they had partial deficiencies (Table 2).

The lowest points the written educational materials received from the DISCERN measuring instrument belong to items stating the references used and the history of the information. Therefore, no comments were made on the subject of the currency of the information used in the written educational materials. In a study made by Barrio Cantalejo and Simon Lorda (2003), it was stated that there was no publication year in approximately one-half of these booklets. In a study in which the diabetes educational booklets were evaluated with the DISCERN measuring instrument, it was stated that the general quality of the written educational material was low (Gokdogan *et al.* 2003a).

When the total points of the educational booklets used in the surgical departments were examined with the DISCERN measuring instrument, they were at a medium level from the aspect of reliability, information quality and general quality. In other words, it was determined that they have serious deficiencies (Table 3). In a study by Wallace *et al.* (2005) in which the written educational materials about osteoporosis on the Internet websites were evaluated with the DISCERN measuring instrument, it was determined that 51·9% of the materials were of low quality.

It is proposed that, for written materials to be effective, besides reliability and information quality, the contents,

form and design should also be effective. The contents should be prepared in a simple, understandable form and in a manner that would facilitate learning. They should make use of photographs, graphs, sketches and computer illustrations. Furthermore, it is also proposed that a large font is used, that there is contrast between the printing and the background colours and that there are sufficient blank spaces (Griffin *et al.* 2003). In our study, it was observed that, in general, the suitability of the written educational materials was at the medium level. When the written educational materials were evaluated for suitability, it was determined that the cultural suitability was complete and that the learning and motivation was at a medium level. In contrast, it was determined that the lowest scores were received for the plan and type part, for the pictures and graphs part, for the literacy part and for the contents part (Table 4). Weintraub *et al.* (2004) stated that a majority of the materials received inadequate points on the subjects of contents, graphs, motivation and stimulation. Wallace *et al.* (2006) stated that the instructions related to the use of the asthma inhalation equipment, which was prepared for patients, was difficult to read and that the length of the text, illustrations and explanations were not suitable for the patients. In a report about the written educational materials in the UK published by the Audit Commission, which convened in 1993, it was stated that the materials received low points for design, order, writing, language and font size and even some of these were impossible to read (Walsh & Shaw 2000).

Weintraub *et al.* (2004) evaluated the suitability of prostate cancer educational materials, and 75·8% of the books were at an adequate level. However, it was stated that 90% of the materials were unsuitable from the aspect of readability. In Turkey, in the study by Gokdogan *et al.* (2003b) in which diabetes educational booklets were examined, it was stated that the educational booklets did not meet the suitability criteria at all or that they were at a very low level.

Limitations

The main limitation of this study was that the materials were only evaluated by researchers (nurse academicians). Evaluations could have been carried out by the patients. Written materials would have been found less understandable and less suitable if they would have been evaluated by the patients. Therefore, this study could not determine how patients with lower reading ability respond to the written educational materials. It would be beneficial to conduct a similar study with both patients and nurses.

Conclusion

It was determined that over half of the surgical clinics included within the scope of the study did not have written educational materials. Most of the written educational materials were at the university hospitals.

It was determined that the written educational materials were at a medium level from the aspect of quality and reliability; in other words, they had serious deficiencies. When the suitability of written educational materials was examined, it was observed that the materials received lower points for the contents, pictures, tables, graphs, writing and plan parts and, in contrast to this, they received high points for the literacy, learning, motivation and cultural suitability parts. It is proposed that the written educational booklets should be prepared by the health professionals according to guidebooks and by taking the target group into consideration.

Contributions

Study Design: FD, EO, AOI; data collection and analysis: FD, EO, AOI and manuscript preparation: FD, EO, AOI.

References

Barrio Cantalejo IM & Simon Lorda P (2003) Can patients read what we want to them to read? Analysis of the readability of printed materials for health education. *Aten Primaria* **31**, 409–414.

Bernier MJ (1993) Developing and evaluating printed education materials: a prescriptive model for quality. *Orthopaedic Nursing* **12**, 39–46.

Blay N & Donoghue J (2006) Source and content of health information for patients undergoing laparoscopic cholecystectomy. *International Journal of Nursing Practice* **12**, 64–70.

Bull FC, Holt CL, Kreuter MW, Clark EM & Scharff D (2001) Understanding the effects of printed health education materials: which features lead to which outcomes? *Journal of Health Communication* **6**, 265–279.

Charnock D, Shepperd S, Needham G & Gann R (1999) DISCERN: An instrument for judging the quality of written consumer health information on treatment choices. *Journal of Epidemiology and Community Health* **53**, 105–111.

Coates VE (1999) *Education for Patients and Clients*. Routledge, Kentucky.

Coudeyre E, Poiraudeau S, Revel M, Kahan A, Drape LJ & Ravaud P (2002) Beneficial effects of information leaflets before spinal steroid injection. *Joint Bone Spine* **69**, 597–603.

Doak C, Doak L & Loring K (1995) *Selecting, preparing and using materials in patient education. Patient Education A Practical Approach*. 2nd edn. California, Sage Publications.

Godolphin W, Towle A & McKendry R (2001) Evaluation of the quality of patient information to support informed shared decision-making. *Health Expectations* **4**, 235–242.

Gokdogan F, Kir E, Ozcan A, Cerit B, Yildirim Y & Akbal S (2003a) Egitim kitapciklari guvenilir mi? (Are educational booklets reliable?) 2. Uluslararasi 9. *Ulusal Hemsirelik Kongresi Kitabi*, Istanbul, Istanbul Universitesi Basim ve Yayinevi Mudurlugu, 517–521.

Gokdogan F, Ozcan A, Kir E, Yildirim Y, Akbal S & Cerit B (2003b) Egitim kitapciklari okunabilir mi? (Are educational booklets readable?) 2. Uluslararasi 9. *Ulusal Hemsirelik Kongresi Kitabi*, Istanbul, Istanbul Universitesi Basim ve Yayinevi Mudurlugu, 545–549.

Griffin J, McKenna K & Tooth L (2003) Written health education materials: Making them more effective. *Australian Occupational Therapy Journal* **50**, 170–177.

Hoffmann T & Worrall L (2004) Designing effective written health education materials: Considerations for health professionals. *Disability and Rehabilitation* **26**, 1166–1173.

McKenna K & Scott J (2007) Do written education materials that use content and design principles improve older people's knowledge? *Australian Occupational Therapy Journal* **54**, 103–112.

Moult B, Franck LS & Brady H (2004) Ensuring quality information for patients: Development and preliminary validation of a new instrument to improve the quality of written health care information. *Health Expectations* **7**, 165–175.

Nolan J, Nolan M & Booth A (2001) Developing the nurse's role in patient education: Rehabilitation as a case example. *International Journal of Nursing Studies* **38**, 163–173.

Rees CE, Ford JE & Sheard CE (2002) Evaluating the reliability of DISCERN: A tool for assessing the quality of written information on treatment choices. *Patient Education and Counseling* **47**, 273–275.

Schrieber L & Colley M (2004) Patient education. Best practice & research. *Clinical Rheumatology* **18**, 465–476.

Scott A (2004) Managing anxiety in ICU patients: The role of preoperative information provision. *Nursing in Critical Care* **9**, 72–79.

Secker J (1997) Assessing the quality of patient-educational leaflets. *Coronary Health Care* **1**, 37–41.

Singh J (2003) Reading grade level and readability of printed cancer education materials. *Oncology Nursing Forum* **30**, 867–870.

Smith H, Gooding S, Brown R & Frew A (1998) Evaluation of readability and accuracy of information leaflets in general practice for patients with asthma. *British Medical Journal* **317**, 264–265.

Wallace LS, Turner LW, Ballard JE, Keenum AJ & Weiss BD (2005) Evaluating of web based osteoporosis educational materials. *Journal of Women's Health* **14**, 936–945.

Wallace LS, Roskos SE & Weiss BD (2006) Readability characteristics of consumer medication information for asthma inhalation devices. *Journal of Asthma* **43**, 375–378.

Walsh D & Shaw GD (2000) The design of written information for cardiac patients: A review of the literature. *Journal of Clinical Nursing* **9**, 658–667.

Weintraub D, Maliski SL, Fink A, Choe S & Litwin MS (2004) Suitability of prostate cancer education materials: Applying a standardized assessment tool to currently available materials. *Patient Education and Counseling* **55**, 275–280.

