

Supporting the health care professionals in evaluating the quality of health educational materials for patients as a new task for medical librarians in Poland

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Introduction:

Patient education should be an integral part of any healthcare services. It is known, that education could reduce patients' anxiety [1], increase their knowledge, improve satisfaction, psychological outcomes, adherence to treatment and disease self management [2]. Especially information given in written form is considered to have a positive impact on the effectiveness of patient teaching, as patients tend to forget information, that is provided verbally [2]. Written materials offer a number of advantages: they reinforce and supplement information that has been provided verbally and facilitate the memorization and recall of the information. Another advantage of this form of education is its consistency, re-usability and portability. Information given in written form enables patients to choose the amount and type of information that suits their information needs [3] and empowers them to learn at their own pace.

There are several factors which need to be considered, when providing (evaluating) the written health education. To achieve its aims, written patient educational material should be based on scientific foundation, realistic and current [4]. This material could only be effective and useful, if it can be read, understood and remembered by patients [5]. The health care professionals may not always be aware of the quality of written patient educational materials, especially the ones provided to their practice by external suppliers like pharmaceutical companies, commercial organizations, scientific societies, or private hospitals. Unfortunately, most of the patient educational materials are produced with inadequate attention to their suitability for the intended audience. Especially elderly people and those with low education attainment may have a problem with understanding the information conveyed in written form. Because of this reason the written patient educational materials should be written simply and at lowest reading level to enable those with low literacy skills to understand basic health information. The medical librarian, especially public health or hospital librarians could play an important role in assisting physicians in assessing of the quality of written health educational materials for patients, especially in terms of their suitability for patients with low literacy skills.

Aim:

The aim of this study was to assess the suitability and readability of the written educational materials being used for education of patients in Division of Pain Research and Treatment of the Jagiellonian University Hospital in Cracow (Poland). The secondary purpose of the study was to indicate which of the materials provided in Division of Pain Research and Treatment have the potential to be the most effective and suitable for patient education. The final purpose of this study was to demonstrate how medical librarians, especially those working in hospitals and public health information centers could support the process of patient education being provided in Polish hospitals.

Methods:

Printed patient educational materials were collected in Division of Pain Research and Treatment of the Jagiellonian University Hospital in Cracow (Poland) from September 2009 to April 2010. Only 12 educational leaflets were collected during this period. Among those were both the leaflets provided by external suppliers (pharmaceutical companies) and those issued by the Polish Pain

Society.

The Suitability Assessment of Materials (SAM) [6] instrument and Gunning-FOG formula [7] were used to assess the suitability and readability of the written health education materials concerning pain and pain treatment.

The Suitability Assessment of Materials instrument (SAM) offers researchers a convenient and systematic method for evaluation of health-related information for adults in terms of their readability (the relative difficulty of decoding words) and comprehension (the relative difficulty of understanding the meaning). SAM instrument was developed in 1993 by Leonard and Cecilia Doak and Jane Root under the John Hopkins School of Medicine project, funded by the National Institutes of Health. Today it is one the most frequently used instruments to assess the quality of patients education materials. SAM consists of 22 factors, grouped into six categories (content, literacy demand, graphic, layout and typography, learning stimulation and motivation and cultural appropriateness). Each characteristic is given a score of 0 (not suitable), 1 (adequate) and 2 (superior). Factors that do not apply are recorded as not-applicable. The percent scores are then grouped into ratings as follows: 0-39% = inadequate; 40-69% adequate; 70-100% superior. Because the category of Culture Appropriateness was not relevant to polish patient educational materials the author of this study resigned of evaluation of the materials in this area.

Instead of the Fry Formula, which was proposed as readability measure in SAM instrument, Gunning-FOG formula (a test designed to measure the readability of a sample of writing) was used to calculate the readability of the educational materials (Tabel I). Index of Gunning was indicated as suitable measure for the examination of the degree of difficulty of Polish texts in the study of Anna Seretny. [8]. In reference to this study the words, which consist of four syllables (not of three, as in the original Gunning-Fog formula) were considered as difficult, due to the nature of Polish language which is dominated by words with three or more syllables.

Table I: The complete Gunning Fog formula used in research as follows:

$$\text{Gunning Fog grade} = 0.4 \times \left[\frac{\text{words}}{\text{sentences}} + \left(100 \times \frac{\text{hard words}}{\text{words}} \right) \right]$$

According to the authors best knowledge this is a first assessment of suitability of polish patient educational materials done by using SAM instrument and one of the first polish studies where quality of patient educational materials was evaluated.

Results:

Twelve written education materials about pain and pain treatment were assessed in terms of their health literacy demand and readability (Table II). Ten of them were supplied by external suppliers and two of them were issued by the Polish Pain Society and were produced under the project „Hospital without pain” and the Polish Program of Effective Pain Control: „Relief in Pain”. The materials fell into following categories: 2 booklets, 3 brochures, 5 leaflets, 2 flyers (single page instruction leaflets).¹ The main topic included: treatment of postoperative pain (n=1), general pain information (n=1), methods of pain treatment (n=5), drug information or instruction of using drug (n=3), methods for pain relief during surgery (n=1), information about the experimental study (n=1). In case of one leaflet it was not clearly stated, if it was aimed at medical staff or patients.

Written health educational materials collected in Division of Pain Research and Treatment of the Jagiellonian University Hospital in Cracow (Poland) were rated in most cases as “superior” (n=8) or “adequate” (n=3), one leaflets was rated as „not suitable”. The best leaflet, which scored 36 points out of the 40 possible (90%), was produced by a commercial organization (pharmaceutical

¹ Classification was made according to the following paper: ODLIS — Online Dictionary for Library and Information Science [9]

company). This leaflet fulfilled almost all of the suitability key criteria identified by SAM instrument such as i.e : adequate literacy level, a throughout use of: conversational style, active voice, simple sentence, and common vocabulary, relevant use of graphic, appropriate use of type size and fonts and predicable flow of information. The lowest score of 13 points out of the 39 possible (applicable) was achieved by the leaflet about Effentora drug. Its major drawback was, that it presented too high literacy demand level. The leaflet was written in to complex language, with unsuitable reading level of 13th grade (reading level of academic text), used jargon and to complicated vocabulary with no explanation. The purpose of the leaflet wasn't explicitly stated and it didn't model any specific readers behaviors. Its additional disadvantage was that it didn't indicate its target audience.

The most important educational material “Relief in Pain”, issued by the Polish Pain Society was assessed as “adequate” (overall “SAM” score of 55%), but did not meet some of the most important SAM evaluative criteria. It was assessed as superior in terms of graphic, typography and layout, but its readability level was exceedingly high (16th grade), with to difficult vocabulary and complex sentences. Nearly all topics included in this material focused on non-behavior facts.

In the majority of the materials (n=10) the purpose was either explicitly stated or implied. The content of most (n=9) of the materials focused on desirable and specific behaviors and the scope of 9 of materials was limited to its purpose and objective. Unfortunately 9 of the resources did not include a summary or review of the information presented.

Overall, the materials scored very poorly on readability with 9 of the materials scoring „not suitable” and 3 scoring „adequate”. None of the materials was scored as „superior” on readability. Writing style (conversational style, active voice, the use of simple sentence) was superior in 6 of the resources, adequate in 4 of resources and not adequate in two. Advance organizers (“road signs” such headers and topic captions, which briefly tell, what is coming next) were used in 12 of the materials. Two materials scored as „not suitable” in terms of vocabulary.

The cover of the materials was friendly, attracted attention and clearly portrayed the purpose of the material in almost half of the resources (3 out of 8 applicable). 2 of the materials used confusing illustration or used no illustration at all.

The assessed materials were of good quality in terms of typography and layout. The layout of almost all (n=11) materials received high („superior”) score and type size, fonts and typographic cues were assessed as superior in 11 of the leaflets.

Though the most of the materials modeled specific behaviors and skills (such as exercise and proper eating habits), only two of the leaflets included some sort of interactive learning stimulation, that contributes to enhanced retention of the information in long-term memory.

The list of the best five leaflets, based on evaluation done with help of SAM instrument was created (Table III). However further evaluation of leaflets in terms of their scientific accuracy, reliability, identification data and general quality would be recommended.

Limitations:

The study has several limitations. It was carried out only on a very small sample of health information leaflets, and therefore on that basis it is not possible to draw conclusions about the general quality of educational materials that are offered in Polish pain treatment clinics. The purpose of the study was rather to assess the quality of materials used in a particular medical practice in order to identify the best available educational resources for its patient. There are also several limitations related to SAM instrument. SAM assesses the materials only in terms of their suitability for patient with low literacy skills. It does not evaluate the materials in terms of their general quality, scientific accuracy and completeness. Secondly the scoring process for the SAM is subjective for most evaluative criteria. For example, the assessment of the appropriateness of the illustrations could be the result of the subjective feelings of the researcher. This is why it is recommended, that at least two people should be involved in the evaluation process and inter-rater agreement between the raters should be measured.

Tabel II**Frequency of SAM scores for each evaluation criteria:**

Criteria	Score of 2 (superior)	Score of 1 (adequate)	Score of 0 (not suitable)	Not applicable
1. Content				
a) purpose is evident	10	1	1	
b) content about behaviors	9	1	2	
c) scope is limited	9	3		
d) summary or review included	2	1	9	
2. Literacy demand				
a) Reading grade level (Gunning-Fog) Superior: 5 th grade level or lower Adequate: 6 th , 7 th , 8 th grade level or lower Not suitable: 9 th grade level and above	0	3	9	
b) Writing style, active voice	6	4	2	
c) Vocabulary	7	3	2	
d) Sentence construction	4	5	1	2
e) Advance organizers	12			
3. Graphics				
a) cover graphics show purpose	3	5		4
b) type of graphic	7	1	1	3
c) relevance of illustrations	4	6	2	
d) lists and tables explained	4	3	1	4
e) captions used for graphics	6	2		4
4. Layot and typography				
a) Layout factors	11	1		
b) typography	11	1		
c) subheadings („chunking” used)	5	5		2
5. Learning stimulation and motivation				
a) interaction used	1	1	10	
b) behaviours are modelled and specific	10	1	1	
c) motivation – self efficacy	9	1		2

Another deficiency of the SAM instrument is that it has not been described neither in the original research [6] nor in other publications, how the instrument was developed and evaluated. The authors reported validation of the tool with 172 healthcare providers, but any details are given about that process. The internal consistency of the SAM has not been reported. For that reason SAM instrument should not be treated as the only possible way of evaluation of health literacy demand of patient educational materials.

Researchers, who use SAM as a suitability assessment method should also be aware, that the complexity of the leaflet could very often be determined by its nature. It is logical, that the leaflet which is constructed in form of instruction, how to stick an analgesic plaster would be less complex than the leaflet describing the different methods of pain treatment. Therefore when evaluating the larger number of leaflets, it is necessary to classify the leaflets according to their types and compare the materials only within the appropriate group.

Evaluation done with the quality assessment instrument is only one method of the evaluation of the quality of written patient educational materials. The ultimate measure of the quality of the leaflets is the increase of patients' knowledge and health behavior change achieved through the use of this particular sort of educational materials. For this reason it is recommended to involve patients in the process of production, testing stages and final evaluation of the leaflets. Future research should also consider the development of the suitability assessment tools, that can be used not only by researchers and practitioners, but also by members of the target audience. [10].

Table III. The list of the best five leaflets available in Division of Pain Research and Treatment of the Jagiellonian University Hospital in Kraków:

Leaflet	Pictures	Overall "SAM" Score
1. Ćwiczenia na kręgosłup szyjny i lędźwiowy		90%
2. Ćwiczenia. Kręgosłup szyjny		82,5%
3. Znieczulenie. Co to takiego?		79%
4. Życie z chorobą zwyrodnieniową stawów		77,50%
5. Jak przyklejać plaster Durogesic?		76,50%

Conclusion:

According to the information collected by the author of this study by the staff of Division of Pain Research and Treatment of the Jagiellonian University Hospital in Kraków, patient education in that pain clinic is in most cases provided verbally. Physicians, nurses and other health care professionals working in this clinic do not have opportunity, due to time restraints to properly assess printed education materials provided by external suppliers, what limits the possibility to supplement health information provided verbally.

Although patient education materials are produced under the projects coordinated by the Polish Pain Society in cooperation with Polish divisions of pain research and treatment, they are later not distributed among patients. Leaflets for patients are very often distributed in limited number among pain specialists during scientific congresses and other meetings and they are not intended for further distribution among patients. The other problem is, that people who are responsible for providing patient information materials about pain and pain treatment under the above mentioned project do not possess a necessary knowledge to produce printed health educational materials in accordance with applicable quality standards, and suitable for those patient with low health literacy skills.

The conducted assessment of the quality of written educational materials for patients could help health professionals from Division of Pain Research and Treatment in choosing the most valuable and suitable materials, especially for those patients with low literacy skills. It could also indicate which features should be taken into account when designing written health materials for patients, to maximize their effectiveness and to reduce barriers which could negatively influence the comprehension of health information. The big advantage of this study was that it helped to identify specific errors occurring in the leaflets produced by the Polish Pain Society, which could impede their proper understanding, such as using of complex language and jargon, or improper use of illustrations. The study has also revealed that too few patient educational materials concerning pain treatment and prevention are produced in Poland, and that some improvement is necessary to be done in that area.

The study aimed to prove, that health librarians and health information specialist, especially those working in hospitals, thanks to their expertise in the field of health literacy and quality of information could play a very important role in supporting the daily medical practice by delivery of the appropriate patient education materials and helping health care providers in the production of patient educational materials. They could also refer the health care professionals to other quality assessment instruments which could enable the judgment of written information in terms of their general quality. By obtaining such a professional assistance of health librarians, health care professionals could ensure, that patient educational resources provided by them conform to the highest comfort of suitability, readability and scientific accuracy.

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