Patient information materials in general practices and promotion of health literacy:

an observational study of their effectiveness

Abstract

Background

Government policy in the UK emphasises providing patients with good health information to encourage participation in their health care. Patient information leaflets (PILs) form part of this policy and have been shown to affect patient health outcomes; however, many are poorly written.

Aim

To describe the PILs in general practice surgeries in Stoke-on-Trent in terms of readability and variety of content.

Design and setting

An observational study of randomly selected GP practices ($n = 17$) across Stoke-on-Trent.

Method

PILs were assessed for readability (Flesch Reading Ease and Flesch-Kincaid Grade Level) and compared with national skills level data and with the recommended level for medical information. The PILs were also categorised for content using the Rudd (2007) health material classification framework.

Results

A total of 345 PILs were collected and assessed. Only 24.3% meet recommended reading-level criteria. Compared with national skills levels, over 75% of the PILs collected were too complex for at least 15% of the English population. Of the PILs, 47.8% were classified as 'systems navigation' (information regarding services); 22.9% were disease prevention (screening and immunisations); 14.2% personal and public safety; and less than 10% were for managing illness or health promotion.

Conclusion

Current PILs in general practices do not all promote health literacy. Information only accessible to a proportion of higher skilled patients may increase inequalities in health. Less than 10% of PILs promote managing illness or healthy lifestyles. Processes must be put in place to improve the readability and variety of content of PILs in GP practices.

Keywords

health literacy; patient information; patient participation.

INTRODUCTION

Government policy in the UK places emphasis on providing patients with good-quality health information to encourage better patient participation in their health care, particularly with reference to managing long-term conditions or promotion of wellbeing. Participation is generally viewed as patients playing a more active role in their health care, including sharing information on their healthcare priorities and taking part in decision making about their care.^{1,2} This is encompassed in a recent Department of Health publication by the phrase 'no decision about me without me'.³ Patient information leaflets (PILs) are widely used as sources of information. Although they can be found almost anywhere that healthcare services are provided, one of the most common places for patients to access PILs is in the waiting room of their general practice.

The purpose of PILs has been widely described 'as part of patient education or health promotion ... supporting preventative, treatment and compliance objectives'.⁴ Dixon-Woods described two discourses distinguished in the literature describing PILs: the predominant discourse of patient education; the second, overlapping, discourse is that of patient empowerment, in that by being provided with information, patients will have the capacity to make informed choices about their health care.⁵ Regardless of the intended function of the PIL, to be effective it must be 'noticed, read,

understood, believed, and remembered'.⁶ In these definitions there is an obvious link to the concept of health literacy, 'the motivation and ability to access, understand and use information in ways which promote and maintain good health'.⁷ Health literacy is closely related to literacy, but is not entirely the same, in that it is being able to apply reading skills and basic knowledge in a health context.⁸ Patient information leaflets are usually 'noticed' in most primary healthcare centres, usually positioned in the waiting rooms, and there is evidence from a recent qualitative study that patients value and access these health information materials.⁴ However, questions are raised as to whether these information materials can be read and understood by patients, and whether they are useful for promoting and maintaining good health.

Research evidence has variously concluded that patient information materials do affect patient health outcomes, patients do want and use them, but that many PILs are poorly written.⁹ As most patient contact with health care is through primary healthcare centres, then the information provided therein must be of an appropriate standard. Unlike verbal information, the reading complexity of written material is fixed and therefore must be at a level that can be understood by most of the population. There have been several frameworks for assessing the quality of PILs,¹⁰⁻¹² and a key component of these is the 'readability' of the

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Submitted: 13 February 2014; **Editor's response:** 25 March 2014; **final acceptance:** 27 May 2014.

©British Journal of General Practice

This is the full-length article (published online 2 Mar 2015) of an abridged version published in print. Cite this article as: **Br J Gen Pract** 2015;

DOI: 10.3399/bjgp15X684013

How this fits in

Patient information leaflets (PILs) provide information to patients to encourage participation in their health care. Research evidence has variously concluded that PILs do affect patient health outcomes, but that many are poorly written. This study shows that less than 25% of PILs in general practice meet recommended reading-level guidance, and that most would be too complex for 43% of the English population. Less than 10% of the PILs covered managing illness or health promotion.

information or the ease in which text can be read and understood. Although 'readability' is not equivalent to health literacy, one can read information without being able to understand it and apply it to one's own health, it is a necessary component. One way of assessing the complexity of written materials is to measure the readability using formulas that assess word and sentence length, such as 'Flesch Reading Ease' and 'Flesch-Kincaid Grade Level'.^{13,14} Although these formulas are not without criticisms in the literature (for example, they do not take account of the use of necessary medical terms and they were developed in the US rather than the UK), they have excellent reproducibility, high correlations with other readability scales, and have been used in many previous studies.^{15,16}

The Flesch Reading Ease test rates text on a 100-point scale. The higher the score, the easier it is to understand the document. A Flesch readability of ≥ 60 is considered to be easy to follow. The Flesch-Kincaid Grade Level rates text on a US school grade level. For example, a score of 8.0 means someone from the eighth grade can understand the document. The lower the score, the easier it is to understand the document.

In the *2011 Skills for Life Survey*,¹⁷ 15% of the English working-age population were measured as having literacy skills lower than those expected of an 11-year-old schoolchild (equivalent to US grade 5–6). In the same survey, 43% of the working-age population had literacy skills less than or equal to 13–14-year-old schoolchildren (equivalent to US grade 8–9). This is similar to average literacy skills in the US, and the general guidance for developing patient information materials is that they should be aimed at the reading level of 10–11-year-olds (US grade 5–6) to be understandable by most of the population.^{15,18}

A further important component in

assessment of health literacy of PILs in waiting rooms is to look at the variety of content of the information materials: are the PILs useful for 'promoting and maintaining good health'? Content of PILs is likely to be context-specific; for example, information on urological procedures would be appropriate in the urology outpatient department. As this study is in the context of primary care, specifically general practice, a broader contextual framework of health would be appropriate. Rudd *et al* developed a framework to capture the wide range of literacy and numeracy skills needed to become and stay healthy.¹⁹ This framework classified health materials into five health activity areas: to promote health (enhance and maintain health), protect personal and public safety (safeguard health of individuals and communities), prevent disease (take preventive measures and engage in early detection), manage illness (seek care and form a partnership with healthcare providers), and navigate the health service (access needed services) (Box 1). This framework has been used in surveys to determine health literacy in the US, Canada, and Australia.^{19–21}

The aim of this study was to describe patient information materials in the waiting rooms of general practice surgeries in Stoke-on-Trent in Staffordshire in terms of readability and variety of content, using the Flesch-Kincaid and Flesch methods,^{13,14} and the Rudd¹⁹ health materials classification framework. Stoke-on-Trent is a particularly apposite area in which to conduct this research as a recent equality and diversity audit from the council reported that Stoke-on-Trent remains lower than average across most health indicators in England.²²

METHOD

GP practices across Stoke-on-Trent were selected using a random number generator to reach a minimum of a one-quarter of available practices, with a total of 17 practices (out of a possible 60) visited by the research team. Members of the research team visited all of these practices over a period of 2 days and collected one example of each available PIL in the waiting rooms (that could be taken by the public). Duplicate leaflets were removed and specific sections from the remaining leaflets were transcribed verbatim. The sections transcribed were the first 100 words, followed by another 100 words from the approximate middle of the leaflet, and a final 100 words from the end of the document (three sections were used to avoid simply looking at introductory or concluding statements). Microsoft™ Word

Box 1. Health materials sampling framework (adapted with permission from Rudd, 2007¹⁹)

Health activities	Focus	Examples of materials	Examples of tasks	Subject areas
Health promotion	Enhance and maintain health	Charts, graphs, lists Food and product labels	Purchase food Plan exercise regimen	Healthy weight
Protecting personal and public safety	Safeguard health of individuals and communities	Health and safety warnings Air and water quality reports	Decide among product options Use/avoid products	Road safety Home safety
Disease prevention	Take preventive measures and engage in early detection	Postings for inoculations and screening Letters related to test results Graphs, charts	Determine risk Engage in screening or diagnostic tests Follow-up	Men's health Cancer screening Reduction in harmful lifestyle activities Vaccination
Health care and management	Seek care and form a partnership with healthcare providers	Health history forms Medicine labels Discharge instructions Education booklets and brochures	Describe and measure symptoms Follow directions on medicine labels Collect information on merits of various treatment regimes for discussion with health professionals	Diabetes mellitus Medication instructions
Systems navigation	Access needed services	Maps Application forms Statements of rights and responsibilities Informed consent	Locate facilities Apply for benefits Offer informed consent	Which services to access when acutely unwell, and how to access them

2007 was used to calculate readability scores using the Flesch Reading Ease and Flesch–Kincaid Grade Level.

The readability statistics were then compared with the national skill levels taken from the *2011 Skills for Life Survey* and with the recommended level for provision of medical information (10–11 years, Flesch–

Kincaid Grade 6).¹⁵ The PILs were also categorised using the Rudd health material classification framework: health promotion; health protection; disease prevention; health care and management; and systems navigation.¹⁹

RESULTS

Readability statistics

In total 345 unique PILs were collected and assessed to provide readability statistics. The Flesch Reading Ease scores of the materials collected ranged from 22.4 to 95.4, with a median score of 61.4 (SD = 11). Flesch–Kincaid Grade Levels ranged from 1.3 to 14.2, with a median score of 8.3 (SD = 2.05). As shown in Table 1, although 80.9% of the PILs had a readability level suitable for US grade 9 and below, only 24.3% were within the recommended reading-level criteria for PILs of US grade 6 or below. In comparison with the national skills levels (which show that 15% of the English population have literacy skills lower than US grade 6), these data show that over 75% of the PILs collected were written at a level too complex for 15% of the English population.

Variety of content

Nearly half (47.8%) of the PILs were classified as 'systems navigation' materials, wherein readers were given information regarding relevant services, such as which

Table 1. Frequency and percentage distribution according to Flesch–Kincaid Grade Level scores

UK key stage	US grade	Age group, years	Frequency of PIL per level	%	Cumulative per cent of PILs
1	1	6–7	2	0.6	0.6
2	2	7–8	4	1.2	1.7
	3	8–9	3	0.9	2.6
	4	9–10	13	3.8	6.4
	5	10–11	19	5.5	11.9
3	6	11–12	43	12.5	24.3
	7	12–13	62	18.0	42.3
	8	13–14	70	20.3	62.6
4	9	14–15	63	18.3	80.9
	10	15–16	39	11.3	92.2
Sixth form	11	16–17	16	4.6	96.8
	12	17–18	7	2.0	98.8
University	13	18 and up	3	0.9	99.7
	14	18 and up	1	0.3	100.0
Total			345	100.0	100.0

PIL = patient information leaflet.

Figure 1. The distribution of Rudd's categories.

service to access when unwell. About 22.9% were classified as disease prevention, for example, screening and immunisations; 14.2% for protecting personal and public safety, for example, fire safety and travel safety guides; 9.9% for managing illness, such as looking after diabetes; and 5.2% for health promotion, such as healthy diet and lifestyle.

Figure 1 shows the distribution of content. Table 2 summarises the readability statistics categorised according to the Rudd classification.

There is some variation between the average readability scores between categories. Health promotion PILs were the easiest to read (Flesch Reading Ease 69.96; Flesch-Kincaid Grade Level 7.3), whereas systems navigation (Flesch Reading Ease 59.94; Flesch-Kincaid Grade Level 8.3) and health care and management PILs (Flesch Reading Ease 60.6; Flesch-Kincaid Grade Level 8.6) scored poorly (Table 2).

DISCUSSION

Summary

The purpose of a PIL is for patient education and information, and patient empowerment,^{2,3} but clearly to be useful for this, leaflets must be appropriately

written and cover a wide range of content, depending on their context. In the context of UK general practice a broad framework, such as the Rudd framework developed in the US, encompassing information about becoming and staying healthy is thought to be appropriate.¹⁹ In this study 345 PILs from a random sample of 17 general practices in Stoke-on-Trent were examined and described according to their readability and subject content.

The data suggest that, on average, the materials collected have readability levels suitable for US grade 8, equivalent to that expected of a 13–14-year-old schoolchild. However, about one in five of the materials require a minimum readability level of that of a 16-year-old school leaver, and some have a grade level as high as 14.2, which is equivalent to the readability level of a second-year university student.

As described previously, the *2011 Skills for Life Survey* showed that 43% of English adults aged 16–65 years were measured as having literacy skills lower than those expected of a 13–14-year-old schoolchild (equivalent across England to over 14.5 million people of working age). Furthermore, 15% were measured to have literacy skills less than those expected by age 11 years (equivalent to over 5 million people of working age).

Therefore comparing the data in this study with the *2011 Skills for Life Survey* would suggest that, on average, PILs in general practice surgeries are written at a reading level too complex for 43% of the population. It is possible that this is a conservative estimate as the *2011 Skills for Life Survey* included only people of working age, and published evidence suggests that literacy and health literacy decline with age.²³ It is also worth noting that only 24% of the PILs were written at the level recommended for writing health materials.^{15,18}

Although the subject content of the PILs collected encompassed all the categories in the Rudd health material classification framework (health promotion, health protection, disease prevention, health care and management, and systems navigation), they were not evenly distributed.¹⁹ It is interesting to note in the current climate of scarce health resources that a large proportion of PILs (48%) were concerned with systems navigation, wherein readers were given information regarding relevant services, such as which service to access when unwell ('Access needed services'). This is clearly important, and a good use of PILs to direct patients to the most appropriate service for their requirements. As an

Table 2. Descriptive statistics on readability measures

Category	Flesch Reading Ease, mean (range)	Flesch-Kincaid Grade Level, mean (range)
Health promotion (n = 18)	69.96 [46.6–81.6]	7.3 [4.3–9.7]
Health protection (n = 49)	63.02 [33.5–94.3]	7.7 [1.7–13.4]
Disease prevention (n = 79)	61.13 [35.4–90.1]	8.3 [2.3–13.6]
Health care and management (n = 34)	60.60 [29.8–76.9]	8.7 [5.9–14.2]
Systems navigation (n = 165)	59.94 [24.5–95.4]	8.3 [1.3–13.0]
Total (N = 345)	61.2 [24.5–95.4]	8.2 [1.3–14.2]

important function of patient information is to empower or enable patients to manage their own health, and to 'supplement and complement' the consultation with the clinician,²⁴ however, it is surprising that only 10% of the PILs were concerned with health care and management ('Seek care and form a partnership with healthcare providers'), and only 5% with health promotion ('Enhance and maintain health').

Strengths and limitations

The main limitation of this study is the use of readability formulae. The formulas (Flesch and Flesch-Kincaid) rely on sentence length and number of syllables in a word. There are obvious limitations with this: a well-understood word may have multiple syllables, such as 'television', whereas a less well-known medical term may have fewer, such as 'stoma'. The formulas do not take account of whether the words are strung together in a cohesive fashion; they have no measure of 'sense-making'. It is well known that layout and style such as font size, use of colour, and capital letters can affect the readability of a document, and these are not assessed by the formulas used in this study.^{25,26} However, it is likely that had it been possible to take these other considerations into account, such as layout and use of medical 'jargon', assessment of the PILs would not have significantly improved; indeed, it is possible that the estimate of poor readability in this study is conservative.²⁷ Finally, no attempt was made to reference the sources of information leaflets included in this study. Some will, of course, be better designed than others, but all were included if they were on display in the waiting room. Future research could examine whether leaflets designed commercially were significantly different in terms of readability from locally produced information.

Comparison with existing literature

The findings regarding readability of PILs are in line with previous literature examining PILs. Indeed, it would seem that despite many studies over many years advising that the writing standards of PILs are not

appropriate for the population they intend to serve, little appears to have changed.^{24,28,29}

The authors are not aware of any previous study that has looked specifically at the readability and variety of content, the 'fit for purpose' of PILs in general practice waiting rooms. A recent questionnaire survey of family practice in Belgium established that patients value health information materials in the waiting rooms and perceive them as being helpful in 'improving patient-physician interaction, health knowledge, and self-management'.⁴ This underlines the importance of providing a range of good-quality PILs in the waiting rooms of general practices.

Implications for research and policy

Current PILs in the waiting rooms of general practices are not likely to be promoting the health literacy of a significant proportion of patients. Good, accessible, rigorously developed information has the potential to inform, educate, and empower patients to take a greater part in their health and healthcare management. Achieving this requires PILs to have appropriate readability levels suitable for their target audiences. When information is accessible to only a proportion of patients with more advanced reading skills, it does nothing to reduce inequalities in health, and perhaps serves to increase them. Future research could also include other sources of information in alternative media such as online and SMS or text messaging, and consider whether commercially and locally produced information are significantly different. Processes and policies are required to improve standards of readability and variety of content of PILs in GP practices, such as a regular review of the reading level and variety of content as a minimum standard; this may be an ideal task to share with practice patient participation groups. The production of information should meet appropriate and clearly defined standards across the NHS, and, given the potential impact on patient health, perhaps should be considered as rigorously as the production of a new medication or procedure.

Funding

This research was funded by Stoke-on-Trent City Council.

Ethical approval

Not applicable. This was a readability study of publicly available materials without use of human participants.

Provenance

Freely submitted; externally peer reviewed.

Competing interests

The authors have declared no competing interests.

Acknowledgements

The authors thank Stoke-on-Trent City Council.

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