Health literacy interventions in the delivery of pharmaceutical care

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Introduction

Medication is the most common intervention to prevent, treat and manage disease and illness. However, its usage has inherent risks and unintentional misuse can lead to increased morbidity, mortality and associated healthcare costs. Patients frequently experience difficulty correctly interpreting medical information and prescription drug label instructions; older patients, patients taking multiple medications and patients with limited health literacy are at a relatively greater risk for experiencing these difficulties and subsequently making medication errors. Multiple factors, such as unnecessarily complex and variable instructions, may contribute to patients’ misunderstanding of labels. The US Institute of Medicine (IOM) has highlighted the variability in the way clinicians write prescriptions and pharmacists transcribe clinicians’ instructions, an issue that has been reported by many studies (IOM, 2004), which can lead to confusion for the patient. Pharmacists are the healthcare professionals who will dispense prescriptions for medication, and as such, have a unique opportunity to advise the patient on any queries relating to their medication and to counsel on appropriate use.

This chapter has several objectives, as follows:

1. To examine the core competencies of the pharmacist as they have evolved over the last number of decades.
2. To define and contextualise the term ‘pharmaceutical care’, in relation to patients and their medicines.
3. To discuss the importance of medication adherence as a modifiable barrier to improve health outcomes.
4. To examine the older adult as a specific demographic in Ireland due to their multimorbidity and polypharmacy.
5. To discuss the impact of health literacy on health outcomes and medication adherence.
6. To discuss the role of the pharmacist in improving medication adherence.
7. To look at the wider implications for other vulnerable groups with a specific example of those with schizophrenia.
Core competencies of the pharmacist

The role of the pharmacist is continuously evolving. The traditional role was that of compounder of medicines, with pharmacists spending much of their time hidden in the dispensary, devoid of meaningful interaction with their patients. However, the current pharmacist is primarily concerned with the safe, effective and appropriate use of medication and the provision of enhanced pharmacy services, including smoking cessation, influenza and herpes zoster vaccinations, blood pressure, cholesterol and diabetes monitoring and emergency contraception, all of which necessitate patient–pharmacist interactions. In Ireland, the pharmacy regulator, the Pharmaceutical Society of Ireland (PSI), is charged with regulating the profession. The PSI is responsible for defining and ensuring the standards of education and training for pharmacists qualifying in Ireland. This includes developing standards, policies and carrying out accreditation of pharmacy degree programmes. The PSI also ensures that registered pharmacists undertake appropriate continuing professional development (CPD). One of the most important documents relating to the profession is the Core Competency Framework (CCF) (PSI, 2013).

What is the Core Competency Framework?

Competencies refer to the knowledge, skills, attitudes and behaviours that an individual develops through education, training and work experience. When combined, these competencies form a competency framework. In Ireland, this framework for pharmacists is based on a global competency framework, drafted by the Pharmacy Education Taskforce (PET). This provides a blueprint for describing the competencies and behaviours of pharmacists in their daily practice, and is divided into six domains of practice: professional practice, public health, supply of medicines, safe and rational use of medicines, organisation and management skills, and personal skills. It also identifies a number of competencies expected of a pharmacist within each domain and provides a number of behavioural statements for each competency, to demonstrate how individuals who possess that competency will behave in practice. For example, in the domain of professional practice, an associated competency reads that the pharmacist ‘practises “patient-centred” care’, with an associated behavioural statement, ‘acts as a patient advocate to ensure that patient safety is not jeopardised’ (PSI, 2013). The CCF permits pharmacists to reflect on their practice and identify learning needs for CPD, provides a platform for the development of specialisation and advanced practice within pharmacy and provides a public statement of the professional role of the pharmacist.

Pharmaceutical care

Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient’s quality of life (Hepler and
Health literacy interventions in the delivery of pharmaceutical care

Strand, 1989). These outcomes are: curing a disease, elimination or reduction of a patient's symptoms, arresting or slowing disease progression or preventing a disease or symptoms. Pharmaceutical care involves the process through which a pharmacist interacts with a patient and other healthcare professionals in designing, implementing and monitoring a therapeutic plan that will produce specific therapeutic outcomes. This process involves identifying, resolving and preventing potential and actual drug-related problems.

In the US the American Pharmacists Association (APhA, nd) has provided a definition of pharmaceutical care: a patient-centred, outcomes-oriented pharmacy practice that requires the pharmacist to work in concert with the patient and the patient's other healthcare providers to promote health, to prevent disease, and to assess, monitor, initiate and modify medication use to assure that drug therapy regimens are safe and effective. The goal of pharmaceutical care is to optimise the patient's health-related quality of life, and achieve positive clinical outcomes, within realistic economic expenditures. To achieve this goal, the following five requirements should be accomplished:

1. A professional relationship must be established and maintained.
2. Patient-specific medical information must be collected, organised, recorded and maintained.
3. Patient-specific medical information must be evaluated and a drug therapy plan developed mutually with the patient.
4. The pharmacist assures that the patient has all supplies, information and knowledge necessary to carry out the drug therapy plan.
5. The pharmacist reviews, monitors and modifies the therapeutic plan as necessary and appropriate, in concert with the patient and healthcare team.

Medication adherence: a modifiable barrier

Medication adherence may be defined as the ‘extent to which the patient’s action matches the agreed recommendations’ (NICE, 2009), or ‘the extent to which patients take medications as prescribed by their health-care providers’ (Osterberg and Blaschke, 2005, p 487). High medication adherence is associated with positive health outcomes (Simpson et al, 2006; Cramer et al, 2008), with the risk of mortality for patients who adhere to therapy approximately half that of those who do not (Simpson et al, 2006). Low adherence is a lost opportunity for health gain and has an impact on a number of stakeholders including the patient, the employer, the Exchequer, the health service and the taxpayer. The sequelae include waste, increased pressure on the health service, loss of productivity, sick days and negative effects on gross domestic product (GDP). Low medication adherence is a substantial obstacle to successful treatment and presents a challenge to healthcare professionals (Miller et al, 1997). The reported prevalence of non-adherence to medication varies depending on how and where adherence is measured, and the length of follow-up. However, it has been demonstrated that chronic conditions
are more likely to be associated with low medication adherence when compared with acute illnesses (Osterberg and Blaschke, 2005), and it has been reported that 20-50 per cent of patients are non-adherent at some stage in their treatment (DiMatteo, 2004; Osterberg and Blaschke, 2005; Brown and Bussell, 2011).

The multidisciplinary team of healthcare providers consists of a prescriber, who will diagnose and recommend therapy if indicated, a dispenser, who will assess the instructions provided by the prescriber to prepare and dispense the medication and the administrator, who will give the medication to the patient, which may also be the patient him or herself. While this process may appear simple, there are human factors that should not be underestimated. It would be incorrect to assume that as soon as a patient receives the medication he/she will follow the instructions blindly and there are many factors that can have an impact on the willingness and ability to follow the advice given. These can include the system or process, the duration of the condition, as already described, the complexity of the regimen and human factors (Sabaté, 2003). To increase the likelihood of positive patient outcomes via medication adherence, healthcare practitioners need to understand and acknowledge the individual patient beliefs and attitudes regarding medication (Kripalani et al, 2007). These beliefs and attitudes are established in early life, independent of gender (Unson et al, 2003; Wrubel et al, 2005), and can have a positive or negative affect on medication adherence, in a similar manner as described by Ponieman et al (2009). The negative impact of side effects (DiBonaventura et al, 2012; McKillop and Joy, 2013), regimen complexity and polypharmacy (five or more medications) (Vermeire et al, 2001; Stone et al, 2001; Golin et al, 2002; Murphy et al, 2003; Vik et al, 2004; Vlasnik et al, 2005; Munger et al, 2007; McKillop and Joy, 2013) on medication adherence is repeatedly and universally reported across a range of diseases, ages, countries and races. However, improving clinical and patient outcomes can be achieved through interventions that improve medication adherence (UN DESA, 2008; Chummun and Boland, 2013). Simplification of medication regimens offers a practical solution (Claxton et al, 2001; Golin et al, 2002; Murphy et al, 2003). Cues, reminders and visual aids can be used to ameliorate the effects of regimen complexity (Ogedegbe et al, 2004). Recognising low or non-adherence presents an opportunity to provide assistance to patients (Munger et al, 2007). As outlined above, it is the duty of the pharmacist to assess these variables, ensuring that the patient has all supplies, information and knowledge necessary to adhere to the treatment plan and to review, monitor and modify this plan as necessary and appropriate, in accordance with the specific needs of the patient. For example, a community pharmacist may offer a monitored dosage system to ameliorate a complicated regime (Zedler et al, 2011).

**The older adult**

The demographic of the Irish population is changing, with the number of older people, that is, those aged 65 or older, increasing. In Ireland, 11.0 per cent of
the population was aged 65 years or more in 2005, and this figure is expected to increase to 24.2 per cent by 2050 (Matthes and Albus, 2014). While those aged 60 or more comprise only 12-18 per cent of the population in developed countries, they are responsible for 60 per cent of medication-related costs (Sabaté, 2003). Therefore, the increasing age of the population places further strain on already stretched healthcare systems. The longitudinal study TILDA reported in 2012 that 34 per cent of Irish community-dwelling adults aged over 65 were taking five or more medications (TILDA, 2012). Similarly, Qato et al (2016) reported a rate of polypharmacy among community-dwelling older people in the US in 2010-11 of 35.8 per cent, a figure that has increased from 30.6 per cent in 2005-06 (Qato et al, 2016). It is evident that providing care for the older adult is complex: a 2016 publication entitled Multimorbidity: Clinical assessment and management (NICE, 2016) provides healthcare professionals with recommendations and guidance on how to care for patients with multimorbidity, more prevalent among older adults as mortality rates have declined (see also Salive, 2013). Pharmacists must be cognisant of potentially impaired cognitive, hearing and sight abilities when consulting with the older adult. However, they are perfectly positioned to review prescriptions, to monitor compliance and adherence on dispensing and to advise the older adult and/or their carers on how to minimise drug-drug interactions, potential side effects and adverse drug events.

Health literacy: impact on health and medication adherence

The Organisation for Economic Co-operation and Development’s (OECD) International Adult Literacy Survey found that 25 per cent of adults surveyed in Ireland in 1994 did not display the literacy skills and confidence needed to take part effectively in society (OECD, 2000). Furthermore, it has been reported in the US that people with limited literacy find health-related documents such as appointment cards, consent forms and prescriptions difficult to read and understand. Research suggests that there is a direct link between individual health literacy and health outcomes (Nielsen-Bohlman et al, 2004), with limited literacy having a direct, negative effect on health (Dewalt and Pignone, 2005). Patients with limited health literacy may have less health knowledge (Gazmararian et al, 2003), poorer self-management skills (Schillinger et al, 2002), lower use of preventive services (Miller et al, 2007), increased hospitalisation rates, worse self-rated health (Baker et al, 1998) and increased mortality (Sudore et al, 2006). Overall, individual literacy skills have repeatedly demonstrated to be a stronger predictor of health status than age, income, employment status, education level and racial or ethnic group (Wolf et al, 2007). Research conducted by this group, involving over 1,750 Irish adults found that, at a minimum, one in seven participants had limited health literacy, which may affect their ability to promote, protect and manage their health (Sahm et al, 2012b). As in the US and the UK, improving health literacy should be a public health objective for Ireland.
Patients with lower health literacy may have difficulty understanding their medication regimen. Marvanova et al (2011) evaluated patients’ understanding of their medicines on admission to hospital and found that patients with marginal or limited health literacy were less likely to understand their medicines when compared to those with adequate health literacy (Marvanova et al, 2011). Similarly Persell et al (2007) reported that patients with limited health literacy were not as able to recall the names of their anti-hypertensive medications when compared to those with adequate health literacy (40.5% vs 68.3%, \( p = 0.005 \)). Having conducted a study in which patients were asked to interpret the instructions provided on the prescription label of a medicine container, Wolf et al (2007) reported that patients with lower literacy were more likely (63%) to misunderstand the instructions compared to those with marginal (51%) or adequate literacy (38%), \( p < 0.001 \), a finding confirmed by Davis et al (2006). In addition, studies that have focused on drug warning or auxiliary labels have shown that those with poor literacy skills have great difficulty in their interpretation, which could have significant safety implications (Davis et al, 2006; Wolf et al, 2006).

**The role of the pharmacist in improving medication use**

Pharmacists also actively contribute to increasing the health literacy of patients, which will empower them to exert greater control over their healthcare (Marshall et al, 2012) and adhere to medication (Ngoh, 2009). Many strategies have been applied to improve medication use in patients with limited health literacy. Clear written and verbal communication is an essential aspect of any consultation between a pharmacist and a patient. Whether it is the provision of a vaccine, the explanation of a new therapy or the recommendation of a product to treat a minor illness or ailment, appropriate questioning and listening are imperative. Pharmacists must consider the factors affecting the patient’s involvement in a consultation, such as physical or learning disabilities, sight or hearing issues and difficulties with reading or speaking English, and to consider ways of making information accessible and understandable to the patient by using pictures, symbols and large (NICE, 2009). Research in the US and Ireland has centred on the medication label instructions that patients receive with their prescription medicine, which can be unnecessarily complex and highly variable (Shrank et al, 2007). Therefore, an effort has been made to standardise the instructions provided, leading to the development of the patient-centred label (PCL) (Wolf et al, 2011). The PCL seeks to organise information on the label from a patient’s perspective, and encourages the prescribing of medication around four standard time periods (morning, noon, evening, bedtime), a format that accounts for how nearly 90 per cent of solid dosage-form medications, that is, tablets and capsules, are prescribed (Hernandez, 2008). It was reported in a study of 500 adults that the PCL format was more likely to be interpreted correctly compared to standard instructions (Adjusted Relative Risk [RR] 1.33, 95% Confidence Interval [CI] 1.25–1.41, \( p < 0.001 \)) (Wolf et al, 2011). In addition, individuals with low literacy levels were more likely to
correctly interpret PCL instructions compared to standard label instructions (low literacy: RR 1.39, 95% CI 1.14–1.68; \( p=0.001 \)). Interestingly, once a graphic was added to the PCL format, levels of correct interpretation decreased (Wolf et al, 2011). A similar study conducted in an Irish cohort of 94 participants reported similar results. While there were no differences in comprehension between the label types among participants with adequate health literacy, those with limited health literacy had better understanding of instructions on the PCL compared to standard labelling formats (91% correct interpretation of PCL labels compared with 66% correct interpretation of standard labels) (Sahm et al, 2012a). Although further studies are needed to refine the use of the PCL to account for situations such as the use of as-required medications or for patients working shift work, the consistent findings in these studies across two jurisdictions suggests that the PCL may be a positive approach to labelling medication, in particular among low-literate patients.

Pharmacists must also consider their verbal communication skills when interacting with these patients. Interactions should begin with an open-style question, such as, ‘What do you already know about…?’ (Kripalani and Weiss, 2006). Based on the response to this question, the pharmacist can tailor the nature of the information they provide, using plain language and avoiding medical jargon, where necessary. The patient should not feel overloaded, limiting information to no more than three key points. Another potential strategy, which should not be underestimated, is the ‘teach-back’ method, used to confirm understanding of the provided information. This strategy involves asking the patient to demonstrate the knowledge that the pharmacist has imparted, giving the opportunity to clarify any misinformation. Due to the large amount of complex information that patients are often provided, reinforcement is an effective strategy to ensure that information is not lost; supplementing oral communication with simple written information, providing visual medication schedules and simplified drug levels can aid the patient in assimilating and retaining information. Finally, providing patients with multidisciplinary disease management education can be extremely effective, especially when dealing with complex medical conditions such as chronic obstructive pulmonary disease and heart failure. A coordinated approach from pharmacists, physicians, nurses, physiotherapists, speech and language therapists and occupational therapists can provide a holistic care package to the patient to ensure optimum health outcomes.

**Special populations**

While we acknowledge that those who have limited health literacy are at a disadvantage relative to those with higher levels of high literacy, this is especially true of special populations, that is, those with mental illness. A study conducted by our group showed that in patients with schizophrenia, the information provided on medicines is not tailored to the target audience (Brosnan et al, 2012). The patients in this study were receiving clozapine for the management of treatment-
resistant schizophrenia, a medication that is required to be administered in the in-patient setting due to its potentially fatal side-effects. The manufacturer-provided information consists of a DVD and a patient information leaflet (PIL). We developed a PIL using guidelines from the National Adult Literacy Association (NALA) and called this the ‘Pharmacist-designed PIL’. We assessed the health literacy of the patients using the Rapid Estimate of Adult Literacy in Medicine (REALM) screening tool. In total 40 patients (of whom 65% were male, 95% unemployed and 70% smokers) of average age 38.0 (±11.2) completed the REALM and gained an average score of 60.6 (±8.7) out of 66. Twenty-nine patients (72.5%) were found to have ‘adequate’ health literacy. The remaining 11 patients were found to have ‘marginal’ health literacy. This means that they would struggle with most patient education materials, while 5 per cent with ‘low’ health literacy would not be expected to be able to read prescription labels. Only 23 per cent of those interviewed recalled watching the DVD on clozapine that is given to them at the initiation of clozapine therapy. The reading levels for the study population were compared to the readability of the manufacturer-produced PIL and the pharmacist-designed PIL. The results of the REALM indicate that 95 per cent of the study population would be expected to be able to read the pharmacist-designed PIL, whereas only 72.5 per cent of the study population would be expected to be able to read the company-produced PIL. It is important to be aware of a patient’s health literacy when providing information, as health literacy is strongly correlated to health outcomes. Although the pharmacist-designed PIL may be a more easily read document, further research is required to design a PIL that meets the needs of low-literacy patients.

Conclusion

This chapter has shown that limited health literacy is an issue for many people and particularly for older adults. Healthcare professionals should be taught how to recognise these difficulties at undergraduate level while studying for their respective professions. By teaching undergraduate students about the inequities surrounding their patients, including limited health literacy, there can be a greater understanding of the challenges of taking medication. Learning communication skills, using role-play, can help to highlight the needs of those with limited health literacy and encourage the student to modify their practice. As practitioners, doctors and pharmacists should be encouraged to adopt the guidelines available from the NALA when providing information on medicines to their patients, and also to recognise the unique learning needs of each patient and to tailor their guidance appropriately, recognising that a ‘one-size-fits-all’ approach will not suffice. At policy level, there should be a move towards more patient-friendly information to be made available on medicines, via a variety of different media, rather than relying solely on information provided by manufacturers and regulators. Now that we have this knowledge and awareness, it is crucial that doctors and pharmacists work independently and together to improve the understanding and
knowledge around medicines for the older adult. Every interaction between a healthcare professional and a patient presents an opportunity to discuss their medicines and any queries that have arisen regarding their medication-taking behaviour. Through partnership with the patient, pharmacists and doctors can learn to adapt their communication skills to enable clear, simple and concise information to be given to the patient, to enhance health outcomes for all.

References


Health literacy interventions in the delivery of pharmaceutical care


TILDA (2012) The Irish Longitudinal Study on Ageing: Towards making Ireland the best place in the world to grow old, Dublin: Trinity College


