Factors associated with adherence to diabetes medicines

A US observational study assessed the patient, prescription and prescriber factors that affect adherence to non-insulin medicines used to manage diabetes. The study assessed information obtained from a database used to collate, process and pay pharmacy prescription claims. In line with the NICE guideline on medicines adherence, the study identified a number of demographic and potentially modifiable prescribing and medicine supply factors that may help to support adherence.

Overview and current advice

It is estimated that between a third and a half of all medicines prescribed for long-term conditions are not taken as recommended. The NICE guideline on medicines adherence defines medicines adherence as the extent to which a patient’s behaviour matches agreed recommendations from the prescriber. The guideline recommends that where non-adherence is identified, possible causes should be clarified and any action agreed with the patient. The guideline also provides recommendations to improve adherence by using tailored interventions to the patient when a patient is experiencing specific difficulties in adhering to their medicines.

A related NICE guideline on medicines optimisation recommends interventions that support the safe and effective use of medicines to achieve the best possible outcomes. The guideline recommendations on medicines optimisation and medicines adherence are brought together in a NICE pathway.

New evidence

A US observational study by Kirkman and colleagues analysed data from a database that was used to process prescription claims from pharmacies for people prescribed medicines for diabetes. The study included a cohort of 218,384 individuals who had prescriptions dispensed in the second half of 2010. The individuals were taking no more than 2 non-insulin medicines (oral medicines or glucagon-like peptide-1 [GLP-1] agonists) and were eligible to continue to receive their prescription benefits through to 2011; this allowed 12 months of data to be available for follow-up.
The primary outcome of the study was medicines adherence; this was defined as an individual being in possession of at least one of their prescribed diabetes medicines for at least 80% of days over the study period. Being in possession of prescribed medicines (medication possession ratio) the authors state is a ‘well-recognised index of adherence’. Almost one-third (31%) of the cohort were found to be non-adherent to their diabetes medicines using this definition, however the study did not examine the reasons for non-adherence (for example whether non-adherence was intentional or not). The authors examined if medicines adherence was independently affected by:

- patient factors (age, gender, education, income, geographic region, other chronic conditions and whether the individual was newly prescribed medicines for diabetes or whether they had had these before)
- prescription factors (how medicines were obtained by the individual [from a community pharmacy or by mail order], how many medicines the individual took each day and out-of-pocket costs)
- or prescriber factors (prescriber age, gender and speciality).

**Patient factors**

Individuals who were newly prescribed medicines for diabetes were 61% less likely to be adherent to medicines compared with those who had already been prescribed medicines for diabetes in the past (Odds Ratio [OR] 0.39; 95% Confidence Interval [CI] 0.38–0.40, \( P<0.0001 \)).

Older age was found to increase adherence:

- Those aged 45–64 years were more likely to be adherent than people aged 25–44 years (OR 0.51; 95% CI 0.49–0.53, \( P<0.0001 \))
- Those aged 65–74 years, and those aged over 75 years were more likely to be adherent compared with people aged 45–64 years (OR 1.27; 95% CI 1.23–1.30, \( P<0.0001 \) and OR 1.41; 95% CI 1.37–1.44, \( P<0.0001 \) respectively).

Gender also seemed to affect adherence, with men statistically significantly more likely to be adherent than women (OR 1.14; 95% CI 1.12–1.16, \( P<0.0001 \)), as were people with a higher household income (OR 1.27; 95% CI 1.23–1.30, \( P<0.0001 \)). Individuals completing graduate school were 41% more likely to be adherent compared to those with a high school equivalent education (OR 1.41; 95% CI 1.36–1.46, \( P<0.0001 \)). There was little variation in adherence between individuals from 4 different geographic regions.

**Prescription factors**

Individuals who obtained their medicines by mail were more than twice as likely to be adherent compared with those using community pharmacies (OR 2.09; 95% CI 2.04–2.13, \( P<0.0001 \)). For each additional tablet or capsule individuals took each day the adherence to diabetes medication increased by 22% (OR 1.22; 95% CI 1.21–1.22, \( P<0.0001 \)). For each additional $15 of out-of-pocket expenses per month adherence was likely to be decreased by 11% (OR 0.89; 95% CI 0.89–0.89, \( P<0.0001 \)).

**Prescriber factors**

When looking at prescriber factors, increasing prescriber age (by each additional year) increased likely adherence to diabetes medicine only by a marginal amount (OR 1.002; 95% CI 1.002–1.003, \( P=0.004 \)) and prescriber gender did not affect patient adherence to medicines. Only one difference was noted for the speciality of the prescribers; individuals who were prescribed their diabetes medicines by non-endocrinologist specialist prescribers were likely to have 9% lower adherence (OR 0.91; 95% CI 0.89–0.94, \( P<0.0001 \)) compared to those whose prescriptions were by primary care prescribers (no significant difference was found for primary care prescribers compared with endocrinologist specialist prescribers).
Study limitations

The study population was limited (despite its large sample size) as it excluded individuals taking insulin (either alone or in combination with oral medicines) who account for 28.7% of the 21 million people in the US diagnosed with diabetes. The study compared individuals who were being maintained on medicines for diabetes with those who were newly prescribed medicine; however, it did not account for the estimated 15% of people in the US who do not get their first prescription dispensed when they are newly prescribed medicines for diabetes. In addition, this study used ‘medication possession ratio’ as a proxy for medicines adherence; it did not examine whether individuals actually took their diabetes medicine.

Commentary

Commentary provided by Medicines and Prescribing Centre

The reasons that determine whether or not people take their medicines are complex. The NICE guideline on medicines adherence identifies 2 main types of non-adherence, intentional and unintentional and the interventions to address these can be quite different. This study is limited to exploring factors associated with non-adherence rather than considering the intentions of the individual. For example, it identified increasing cost of medicines as a factor but this does not tell us whether the non-adherence was intentional (i.e. an unwillingness of individuals to pay for their medicines) or unintentional (i.e. an inability of individuals to pay for their medicines). It does, however, highlight some potential factors that practitioners could to take into account when discussing medicines adherence with patients.

This study found that as the number of medicines taken each day increased adherence to diabetes medicines also increased. This is a somewhat unexpected finding but it might be explained by the population from which the study cohort is taken (i.e. those who have insurance, which includes pharmacy benefits, may be more likely to make use of their access to medicines).

The study findings may be generalisable to the UK; although those regarding out-of-pocket expenses and income may be less applicable, particularly as individuals in the UK who have diabetes receive free prescriptions via medical exemption (except where treatment is by diet alone). It has been announced that in order to improve patient care by boosting adherence and reduce waste, drugs costing more than £20 will have their price printed on the packaging, and will also be marked ‘funded by the UK taxpayer’.

This study highlights the importance of following the NICE guideline on medicines adherence, which recommends that practitioners routinely assess adherence in a non-judgemental way whenever they prescribe, dispense and review medicines. Adherence to medicines follows on from the assessment of the level of involvement of patients, and their family members or carers (where appropriate) want to have in decision making about their medicines. The NICE guideline on medicines optimisation recommends ensuring that patients are able to make well-informed choices consistent with their values and preferences.

Further research could look at the significant findings regarding how people obtained their prescriptions (online pharmacy compared to community pharmacy) and the effects on non-adherence in a UK context.

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References


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