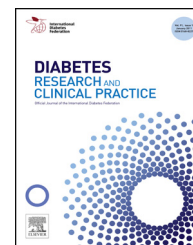


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### Brief report

# Self-monitoring of blood glucose in type 2 diabetes: Patients' perceptions of 'high' readings



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#### ABSTRACT

Among 207 non-insulin using patients with type 2 diabetes in Tayside, Scotland, who self-monitored blood glucose, we present evidence that many are tolerant of higher blood glucose levels than are clinically advisable; this may explain the lack of empirical evidence for the clinical benefits of self-monitoring in this group.

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## 1. Introduction

We recently published data on self-monitoring of blood glucose (SMBG) behaviour among non-insulin treated patients with type 2 diabetes mellitus in Tayside, Scotland, and their behavioural responses to SMBG readings [1]. We now present additional data relating to their perceptions of high blood glucose readings.

## 2. Materials and methods

The study included 207 patients (58% male; mean age 63 years; range 36–76 years) resident in Tayside, Scotland, who all had electronic records of SMBG prescriptions dispensed and were a representative sample recruited from primary care [1]. Diabetes duration ranged from <2 years (8%) to >10 years (29%). 80% were treated with metformin and/or

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sulphonylureas, 10% with injections of exenatide or liraglutide, and 12% by diet/lifestyle. Patients were asked to indicate what blood glucose readings that they 'were happy with', and those that they 'considered to be high'. For specified values, we calculated the proportion that would be 'happy with' these readings.

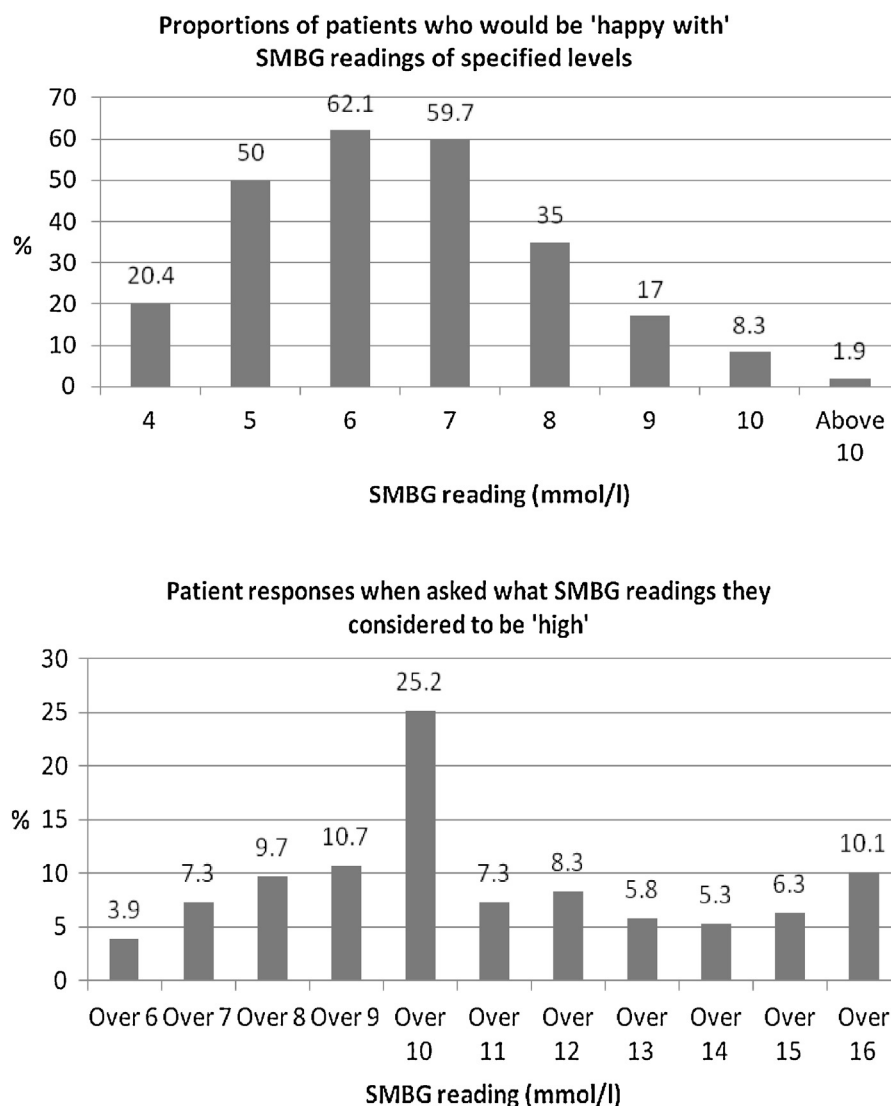
### 3. Results

The majority of patients reported being 'happy with' readings between 5 and 7 mmol/l (Fig. 1). Notably, though, 35% were 'happy with' 8 mmol/l, and 17% with 9 mmol/l. Although these values were not related to specific times of the day, only 11 (5%) patients reported that they checked their blood glucose levels after meals (when higher values are acceptable). When patients were asked what they considered to be a 'high' reading, some gave very specific ranges (e.g. '12.9–13'; '10.5–11.1') while others were more general (e.g. 'anything

above 10'; 'double-digits'). Fig. 1 shows the proportions of patients who considered specified values (or over) to be high. Where a range was given, we determined the lowest value of this range. For 68% of patients, this was 10 mmol/l. For 10%, it was 16 mmol/l. Interestingly, 128 of the patients reported having received information/education on SMBG, 112 of whom stated that they had been told what their targets should be.

### 4. Discussion

Although these findings may help to explain the lack of empirical evidence surrounding the clinical benefits of monitoring (i.e.; the failure of many studies to identify an association between SMBG and improved glycaemic control may be because many patients are satisfied with high blood glucose readings and do not respond to readings recognized clinically to be high), they do need to be interpreted with



**Fig. 1** – Proportions of patients who would be 'happy with' readings of a specified level (mmol/l) (upper panel), and proportions who considered readings of a specified level (mmol/l) to be 'high' (lower panel).

caution. While many patients may not have knowledge of appropriate target ranges, it may also be that some use SMBG principally to avoid hypoglycaemia (around half of our patients were treated with sulphonylureas). Clinicians therefore need to understand the particular reasons and motivations of patients who self-monitor when they discuss target ranges, and also be aware that there may be upward slippage in patients' targets over time (as observed among patients with type 1 diabetes for a variety of reasons [2]). If patients do wish to continue SMBG, they need to have education on appropriate blood glucose level targets for their particular context, and this may need to be re-inforced over time.

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### Conflict of interest

All authors declare that they have no conflict of interest with the article.

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