

Assessment of diabetes knowledge among healthcare assistants in a district general hospital inpatient setting

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Article points

1. The authors assessed diabetes knowledge in healthcare assistant (HCAs), who regularly monitor blood glucose levels of acutely unwell inpatients, using a locally developed peer-reviewed questionnaire in a district general hospital.
2. The knowledge of these HCAs around diabetes was found to be inadequate, and almost all of them felt they were not given enough training and requested further education.
3. The author plans to use these findings as the basis for creating a diabetes education programme for HCAs employed by the Trust to improve the safety, treatment and management of hypoglycaemia within the hospital inpatient setting.

Key words

- Blood glucose monitoring
- Healthcare assistants
- Inpatient care
- Staff education

Authors

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In UK hospitals, more than 1 in 5 inpatients with a previous diagnosis of diabetes will experience low blood glucose levels during their hospital stay. Acute medical inpatients with diabetes can often be subject to more complex issues affecting their stay in hospital, so experiencing avoidable drops in blood glucose levels can further complicate their management plan. Healthcare assistants (HCAs) provide support in a number of nursing interventions, including monitoring blood glucose in those with diabetes. Their role is to record the blood glucose levels and inform a trained health professional when blood glucose is abnormal. This means, therefore, that HCAs should be fully trained in diabetic procedures for inpatients. Quantitative and qualitative research was undertaken within a Merseyside hospital Trust to assess HCAs' knowledge of typical procedure regarding inpatients with diabetes.

Hypoglycaemia occurs in 7.7% of admissions and results in increased length of stay and increased mortality rates (Turchin et al, 2009; Hulkower et al, 2014; McEwan et al, 2015). The National Diabetes Inpatient Audit (NHS Digital, 2016) reported that 21.2% of patients at the St Helens and Knowsley Trust experienced an episode of mild hypoglycaemia while 11.4% of patients experienced severe low blood glucose levels, which can lead to life-changing disability or death if left untreated. At any one time, approximately 13% of the adult inpatient population the St Helens and Knowsley Trust has diabetes. It is vital, therefore, that the management of hypoglycaemia within the hospital setting is timely and appropriate.

Hospital admission rates and length of stay are substantially greater for people with diabetes (Pickup and Williams, 1991) and even when

the admission diagnosis is similar, people with diabetes stay in hospital up to twice as long as those without diabetes (MacKinnon, 1993). The reason for this may, in part, be inherent to the condition itself; for example, people with diabetes have more extensive myocardial damage following myocardial infarction, with more complications (Abbott, 1988). It is widely believed, however, that suboptimal management of diabetes on general wards may also be a contributing factor (Callaghan and Williams, 1994; McDermott, 1995; Driskill, 1996; O'Brien et al, 2004).

The role of the health care assistant (HCA) emerged primarily to support the professional nurse and to undertake perceived “non-nursing” duties under the direction and supervision of qualified nurses. While HCAs represent a substantial proportion of the healthcare workforce, the growth of their role has taken

place without regulation, clear boundaries, or systematic education and training. (McKenna, 2004). In many acute clinical areas, physiological measurements, such as blood glucose monitoring are undertaken regularly by HCAs. If an inpatient's condition is causing concern, the HCA's responsibility is to record values in the individual's notes and to communicate this information to a qualified professional so that timely and appropriate help can be given (Lewis, 2012). If the HCA has not had the appropriate systematic education and training, however, would they know how to recognise and act upon a concerning blood glucose level?

Taking into account the vast numbers of hospital inpatients having diabetes, their extended lengths of stay and the increasing responsibility of HCAs to perform blood glucose monitoring, ensuring that HCAs have adequate knowledge to not only monitor blood glucose, but to safely understand and act upon the blood glucose result is absolutely imperative to ensure the safety and optimal management of inpatients with diabetes. To explore this issue further, we assessed the understanding of blood glucose in 30 HCAs using a quantitative questionnaire devised by the authors.

Aim

The aim of this study was to formally assess the diabetes and blood glucose knowledge among HCAs working within St Helens and Knowsley Teaching Hospitals in acute inpatient settings. The HCAs were also asked if they felt that they had adequate training around blood glucose monitoring before being expected to carry out this task on the wards. This study aimed to identify whether there was a need to create a diabetes education programme for HCAs in this hospital trust.

Method

The study was approved by Liverpool John Moores University and the St Helens and Knowsley Hospital Local Research Ethics Committee, Research Governance Department. All participants gave written informed consent prior to undertaking any study activities. The

study was conducted during February and March, 2016.

A total of 30 HCAs working on acute inpatient wards, including general medical and surgical wards, were opportunistically selected and completed a 12-item questionnaire created by the authors to assess their knowledge of blood glucose monitoring values, hypoglycaemia, appropriate blood glucose testing, hyperglycaemia and personal training needs. Questionnaires were developed using common themes identified as poor practice in the National Diabetes Inpatient Audit. The first ten questions were around knowledge, with either "correct" or "incorrect" answers. The final two questions asked the HCA if they felt they had been given adequate training around blood glucose monitoring and if they felt they would benefit from additional teaching sessions. Questionnaires took 5–10 minutes to complete and were conducted in a private room.

Data were analysed in Microsoft Excel 2010, and are expressed in percentages.

Results

Overall, 191 of the 300 (63.6%) quantitative questions answered by the HCAs were incorrect.

All participants reported that they would like further training to complete blood glucose monitoring accurately. Only one HCA out of 30 felt that they had received adequate training prior to starting their role, but still felt that they wanted more training around blood glucose monitoring and diabetes. Below is a breakdown of the questions asked and the percentage of correct and incorrect answers. *Figure 1* (overleaf) illustrates the number of correct and incorrect answers for each question.

- Question 1: What is the normal blood glucose level range for a person with diabetes?; 70% of the HCAs answered incorrectly, or did not know.
- Question 2: If a patient had a blood glucose level of 3.5 mmol/L, what would you do?; 70% of the HCAs answered incorrectly, or did not know.
- Question 3: Should blood glucose levels be tested before or after the patient has eaten?; 73.3% of the HCAs answered incorrectly, or

Page points

1. In many acute clinical areas, physiological measurements, such as blood glucose monitoring are undertaken regularly by healthcare assistants (HCAs).
2. The aim of this study was to formally assess the diabetes and blood glucose knowledge among HCAs working within St Helens and Knowsley Teaching Hospitals in acute inpatient settings.
3. Thirty HCAs completed a 12-item questionnaire to assess their knowledge of blood glucose monitoring values, hypoglycaemia, appropriate blood glucose testing, hyperglycaemia and personal training needs. Questionnaires were developed using common themes identified as poor practice.

Page points

1. The study found that healthcare assistants (HCAs) working on acute inpatient wards within St Helens and Knowsley Teaching Hospitals had an inadequate understanding of diabetes in general, blood glucose monitoring and how to safely act abnormal blood glucose level readings.
2. Despite this gap in knowledge, almost all of the HCAs understood about the importance of running a daily quality check (QC) on the blood glucose monitor, suggesting that the training they receive around blood glucose monitoring focuses more on the practical side of this task.

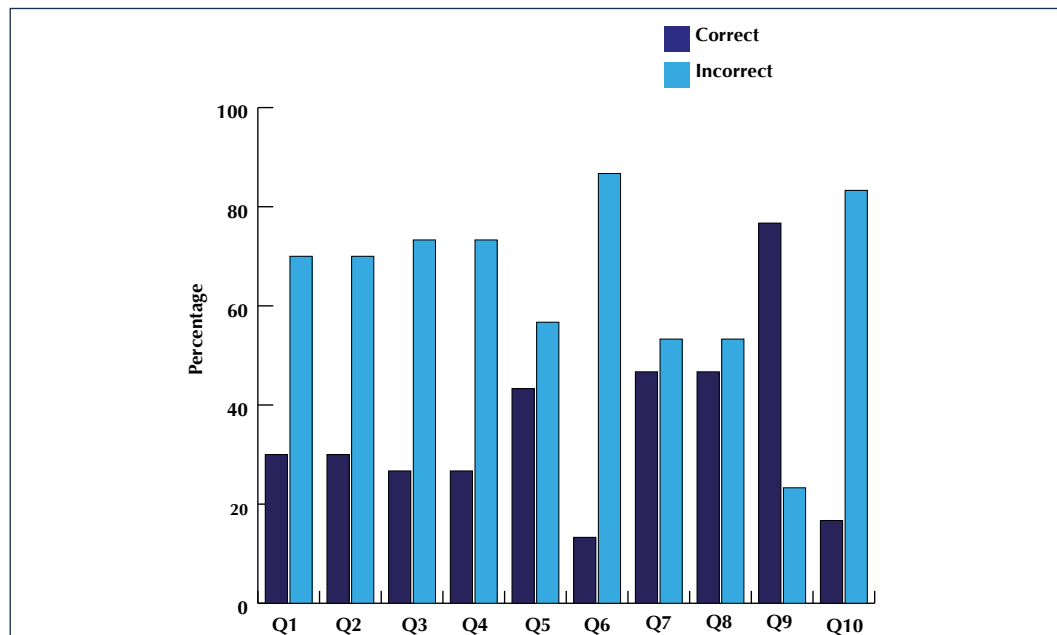


Figure 1. Percentage of correct and incorrect answers for each quantitative question.

- did not know.
- Question 4: If a patient had a blood glucose level of 15 mmol/L, what would you do?; 73.3% of the HCAs answered incorrectly, or did not know.
- Question 5: If a patient who is on insulin did not eat anything all day, what would happen to their blood glucose level?; 56.7% of HCAs answered incorrectly, or did not know.
- Question 6: A good way to treat a “hypo” is a glass of milk; 86.7% of HCAs answered incorrectly, or did not know.
- Question 7: Patients with low blood glucose need more insulin; 53.3% of HCAs answered incorrectly, or did not know.
- Question 8: A patient who is on insulin looks very pale, clammy and is shaking. They tell you they feel funny. What would you do?; 46.7% of HCAs answered incorrectly, or did not know.
- Question 9: The blood glucose monitoring machine needs to have a quality control test done every 24 hours; 23.3% of HCAs answered incorrectly, or did not know.
- Question 10: Everyone with diabetes needs to have their blood glucose level checked every day while they’re in hospital; 83.3% of HCAs answered incorrectly, or did not know.

- Question 11: Do you feel that you were given adequate training around blood glucose monitoring and interpretation of results before you were expected to do it on the ward?; 96.7% of the HCAs questioned answered that they did not feel they were given adequate training.
- Question 12: Do you feel that HCAs would benefit from teaching sessions around blood glucose monitoring and diabetes?; 100% of HCAs questioned answered “yes”.

Discussion

This study primarily found that HCAs working on acute inpatient wards within St Helens and Knowsley Teaching Hospitals had an inadequate understanding of diabetes in general, blood glucose monitoring and how to safely act abnormal blood glucose level readings. Despite this gap in knowledge, almost all of the HCAs understood about the importance of running a daily quality check (QC) on the blood glucose monitor, suggesting that the training they receive around blood glucose monitoring focuses more on the practical side of this task, without adequate education around interpreting blood glucose results and how to safely act upon them. This point is further

reflected in the 100% response rate of HCAs wanting to have more training around blood glucose monitoring and diabetes.

Several other studies have found a similar lack of knowledge around diabetes, but mainly in ward-based qualified nurses (Uding et al, 2002; Thomas, 2004). A literature search for other studies that supported the findings of this study, or even explored the role of HCAs, who monitor blood glucose levels, was unfruitful for the most part. There appears to be a gap in research studies exploring the role of the HCA and as Stokes and Warden (2013) discuss, the ever increasing responsibilities of the HCA in the acute setting means that more research is needed in this area to create a reliable evidence base. As Cardwell et al (2016) state:

“Much of the literature concentrates on nurses, students and medical staff, but HCAs provide a significant part of patient’s daily care. As HCAs roles increasingly include blood glucose monitoring, meal time support and recognising hypoglycaemia, it is vital that HCAs are not overlooked when consideration is given to education and training in the future.”

The findings of this study present some implications for practice. Firstly, the safety of HCAs interpreting blood glucose results and correctly acting upon them must be addressed. For 86.7% of HCAs questioned to believe that a glass of milk is an adequate treatment for hypoglycaemia is a concerning statistic. Shah (2009) reminds us that untreated hypoglycaemia can result in severe neurodevelopmental sequelae, brain damage and death, and therefore the immediate treatment of hypoglycaemia is critical. This is a safety issue that must be addressed in order to prevent potential harm to inpatients with diabetes. The majority of HCAs questioned were aware of the importance of the blood glucose monitor having a QC every 24 hours, demonstrating that the training they received around this aspect of diabetes care has been adequate.

It appears that additional training is needed for HCAs around diabetes in general. This need is reflected in the feedback given by the HCAs questioned; 100% expressed that they wanted

additional training around diabetes, and only one person out of 30 questioned felt that they had received adequate training around blood glucose monitoring to begin with, but still expressed the need for further training. With a staff group such as this, who overtly need additional training in order to safely perform the ever-growing list of clinical tasks and responsibilities expected of them, along with an apparent desire for more training around diabetes, we intend to set up a structured education session to run alongside the current bi-annual training that HCAs receive. This structured education will aim to fill the gaps in knowledge around diabetes to ensure safe and knowledgeable practice is achieved by all HCAs. Wilkinson et al (2004) support the need for diabetes education programmes being delivered to staff in order to ensure patient safety; however Trepp et al (2010) argue that some hospitals may be unwilling to allocate funding to a preventative measure such as this, as much of the funding in diabetes is currently absorbed into treatment, as opposed to prevention.

Limitations

Despite the data being consistent with previous findings from other published study papers, the study has some limitations that should be acknowledged.

The small sample size of 30 HCAs weakens the robustness of the results. As Button et al (2013) state, studies with a small sample size have low statistical power, and therefore a reduced chance of detecting a true effect.

The study being conducted in just one hospital trust reduces the generalisability of the findings, as this may be an issue specific to our Trust training for HCAs. This could be improved by expanding the study to other trusts to explore if this is an NHS-wide issue.

The study has no intervention arm, which would provide comparative results. This could be improved by expanding the study to include an intervention of an education programme for the HCAs and subsequent repetition of the questionnaire to test if an improvement has occurred.

Page points

1. The need for further diabetes training was identified by 100% of the healthcare assistants (HCAs) in the study.
2. The findings of this study present some implications for practice, for example, the safety of HCAs interpreting blood glucose results and correctly acting upon them must be addressed.
3. The authors intend to develop a structured education session on diabetes and glucose monitoring, which will run alongside the existing training schedule.

This lack of knowledge puts patients at risk of untreated hypoglycaemia or diabetic ketoacidosis, both of which can result in death.

Conclusion

The HCAs questioned worked in acute inpatient settings providing care for acutely unwell patients, of whom 12–25% (Hillson, 2015) will have diabetes. These HCAs did not have adequate knowledge to safely recognise abnormal blood glucose results, the symptoms of hypoglycaemia and how to act upon these situations safely, due to inadequate education at the point of blood glucose monitoring training. This lack of knowledge puts patients at risk of untreated hypoglycaemia or diabetic ketoacidosis, both of which can result in death. The findings of this study indicate that structured education should be an essential requirement for HCAs to learn not only how to monitor patient's blood glucose levels, but how to safely interpret and act upon these levels. ■

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