

The Hypoglycaemia Awareness Questionnaire (HAQ)

Sanjay Kalra,¹ Deepak Khandelwal²

Abstract

This communication shares a simple structured 12 item Hypoglycaemia Awareness Questionnaire (HAQ) which helps in screening and identification of hypoglycaemia. This tool helps complement the role of self-management of blood glucose in diabetes care. The choice of questions is such that they cover all pathophysiologic mechanisms of hypoglycaemia, including adrenergic, neuroglycopenic, nocturnal and general. The queries cover a wide spectrum of complaints which are articulated by patients across South Asia.

Keywords: Adrenergic symptoms, cross cultural differences, diabetes, glucagon, insulin, neuroglycopenia, sulfonylureas.

Screening for Hypoglycaemia

By definition hypoglycaemia is diagnosed by biochemical assessment of plasma glucose levels.¹ However, symptoms of hypoglycaemia may occur so suddenly that there may not be adequate time to check glucose levels. In such situations, the emphasis is on addressal of symptoms, to prevent potential threats to health.

In resource-challenged settings frequent self-monitoring of blood glucose (SMBG) may not be available to all. Persons on intensive insulin therapy, or on oral drugs which may cause hypoglycaemia, need to rely on other means of managing hypoglycaemia. One such strategy is the ASAP (anticipate, suspect, act, prevent) suggestion.²

Hypoglycaemia Awareness

Persons at risk of hypoglycaemia need to anticipate and suspect hypoglycaemic episodes, so that preventive and immediate corrective measures can be done. This is facilitated by the process of hypoglycaemia awareness training (HAT).³ To maximize the efficiency of this training, persons with diabetes must be trained in hypoglycaemia perception and identification. This can be achieved by explaining the pathophysiology and symptomatology of hypoglycaemia perception and identification.

¹Department of Endocrinology, Bharti Hospital, Karnal, ²Department of Endocrinology, Maharaja Agrasen Hospital, New Delhi, India.

Correspondence: Sanjay Kalra. Email: brideknl@gmail.com

Hypoglycaemia Identification Tools

Few objective tools exist to facilitate this. One such tool is the Stanford Hypoglycaemia Questionnaire (SHQ), a 7-item instrument which has been used in Spanish and English.⁴ Other non-validated questionnaires are also available online.⁵

The spectrum of symptoms suggestive of hypoglycaemia, however, is much wider than that captured by the SHQ. There are reports of cultural differences in perception of hypoglycaemia.^{6,7} and of culture bound symptoms of this complication.⁸ Discussions with diabetes care professionals across South Asia, who deal with multiple linguistic groups, reinforces this impression.

Need For New Tools

Therefore, there is a need for a more comprehensive tool to detect hypoglycaemic episodes clinically, and improve hypoglycaemia awareness. This tool should be pathophysiology based, clinically relevant, and simple to understand and administer. It should also facilitate decision making with regards to self titration of doses of glucose lowering therapy. From a global perspective, it should lend itself to easy translation as well.

Hypoglycaemia Awareness Questionnaire (HAQ)

We have used such a questionnaire (Table) in our clinical

Table: Hypoglycaemia Awareness Questionnaire (HAQ).

	Never	Once	More than once
In the past one week, have you experienced unusual episodes of:			
Feeling of uneasiness	0	1	2
Profuse sweating, not explained by ambient temperature	0	1	2
Trembling/shaking	0	1	2
Palpitations	0	1	2
Uncontrollable hunger	0	1	2
Difficulty in thinking, concentrating, speaking, seeing, hearing or moving	0	1	2
Altered movements or seizures	0	1	2
Extreme weakness/ giddiness/dizziness	0	1	2
Loss of consciousness or fainting	0	1	2
Disturbed sleep/ nightmares	0	1	2
Early morning headache	0	1	2
Documented, reliable low blood glucose values	0	1	2

Compare scores at each visit. Higher scores should prompt changes in glucose monitoring and therapeutic strategies.

practice, and in training sessions across Asia. The Hypoglycaemia Awareness Questionnaire (HAQ) (HAQ stands for 'rights' in Urdu and Hindi) is a simple structured tool which lists 12 questions. Of these, 4 relate to adrenergic symptoms, 4 to neuroglycopenia, and 2 to nocturnal hypoglycaemia. One symptom can be classified as 'general' (a feeling of uneasiness, described as 'ghabrahat' in Urdu, Hindi and Punjabi; 'ghabra' in Bangla and Telugu). The 12th item is based on SMBG, and explores 'documented reliable low blood glucose values'. All enquiries relate to the preceding week and specify 'unusual episodes' in the question stem.

Advantages

Administration of this tool serves multiple purposes. It enhances the history taking skill of the diabetes care professional, and provides a check list for screening an important acute complication of diabetes. The questionnaire provides leads for screening and diagnosis of chronic complications such as autonomic neuropathy as well. It may serve as a springboard for clinical identification of diverse comorbid conditions, ranging from hot flashes to acute panic attacks.

From a therapeutic perspective, it allows physicians suggest titration of dosage of glucose-lowering drugs, especially insulin and sulfonylureas.⁹ From a patient perspective, HAQ facilitates patient empowerment, which is the right (HAQ) of every individual with diabetes. A positive response to one or more questions should prompt the patient to modify diet pattern, physical activity or drug dosage, as appropriate. It should also encourage an increase in frequency of SMBG, or a consultation with the health care provider.

Practical Utility

While the HAQ has not been tested in formal trials, we find encouraging results in our practice. Our diabetes educators use this as a checklist in every outdoor patient on insulin or sulfonylureas.

The results are able to 'red flag' persons who may be at risk of hypoglycaemia, and who may benefit from down titration or change of their therapy. While HAQ cannot serve as a substitute for SMBG, it certainly complements the latter. Thus HAQ serves as tool for safer, better tolerated, and more effective diabetes care.

References

1. Frier BM. Hypoglycaemia in diabetes mellitus: epidemiology and clinical implications. *Nat Rev Endocrinol*. 2014; 10: 711-22.
2. Kalra S, Gupta Y. Prevention of hypoglycaemia, the ASAP (Anticipate, Suspect, Act, Prevent) strategy. *J Pak Med Assoc*. 2017; 67: 648.
3. Iqbal A, Heller SR. The role of structured education in the management of hypoglycaemia. *Diabetologia*. 2017; 28: 1-0.
4. Hypoglycemia. [Last accessed on 2017 October 1]. Available from URL: <http://www.patienteducation.stanford.edu/research/hypoglycemia.html>.
5. Hypoglycemia questionnaire. [Last accessed on 2017 October 1]. Available from URL: www.hypoglycemia.asn.au/wp-content/.../HYPOGLYCEMIA_QUESTIONNAIRE.pdf
6. Kalra S, Balhara YP, Mithal A. Cross-cultural variation in symptom perception of hypoglycemia. *Journal of mid-life health*. 2013; 4: 176.
7. Bhutani J, Kalra S, Bhutani S, Kalra B. Hypoglycemia perception: Cross-cultural differences in Punjabi and Hindi speaking postmenopausal women. *Indian J Endocrin Metabol*. 2013; 17(Suppl1): S286.
8. Kalra S, Gupta Y. Culture bound hypoglycemia symptomatology. *Journal of mid-life health*. 2014; 5: 98.
9. Kalra S, Deepak MC, Nearing P, Singh V, Uvaraj MG, Agrawal N. Usage pattern, glyceimic improvement, hypoglycemia, and body mass index changes with sulfonylureas in real-life clinical practice: results from OBSTACLE Hypoglycemia Study. *Diabetes technology & therapeutics*. 2013; 15: 129-35.