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'Meaningful meetings' – A pilot study to improve the diabetes clinical encounter for nurses and patients using The Diabetes MyQuest Consultation Tool©

Gillian Ann Hood*[1], Sue Shea[2,3] and Anne Worthington[1]
[1]Barts and the London School of Medicine and Dentistry, Queen Mary University of London, UK; [2]Research Centre for Transcultural Studies in Health, Middlesex University, UK; [3]Clinic of Social and Family Medicine, University of Crete, Greece

Background: The clinical encounter between nurse and patient is an important and growing strategy in the management of Type 2 Diabetes Mellitus in primary care settings. However, due to time pressures, lack of knowledge, training and skills, the meeting can be a frustrating experience for both the nurse and the patient, and the potential to improve diabetes self-management may be sub-optimal.
The Diabetes MyQuest Consultation Tool© (DMCT©) has been designed in collaboration with both patients and nurses to improve the consultation by using a person centred approach, identifying psychological problems which may affect self-management, and promoting a more meaningful meeting between both parties.
Methods: The DMCT© was piloted using a randomised control trial to gauge how feasible, practical and acceptable the application of the questionnaire would be in primary care settings to both nurses and patients. The pilot further explored whether the tool would promote diabetes knowledge, increase consultation satisfaction and improve diabetes self-efficacy in patients compared to usual care. The study used a mixed methods approach of qualitative interviews and three measures: a diabetes knowledge questionnaire (DKQ); satisfaction with the consultation questionnaire (DCPNI) and a diabetes empowerment scale (DES-SF). All participants were given the WHO-5 Well-Being Index to complete.
Results: The age range of the sample ($n = 106$) was 40–90 years ($m = 67$ years) and comprised of 66 males, and 40 females. The average duration of diabetes was 9 years, and at the pre-study visit the mean values for BMI, cholesterol and HbA1c were 30.7 kg/m^2; 4.2 mmols/l and 55.0 mmols/mol, respectively. Fifty-six patients were randomised to use the DMCT© tool as part of their consultation. There were no significant differences to HbA1c, Cholesterol or BMI between the control and intervention groups. There were minor but noted improvements in the control group between the pre and post measure for DKQ (mean increase 1.10; $p > 0.001$), whereas the intervention group demonstrated significant improved changes for all three measures: DKQ (mean increase = 1.41; $p > 0.000$), DCPNI (mean increase = 2.1; $p > 0.002$; DES-SF mean increase = 2.5; $p > 0.000$). All participants completed the WHO-5 Well-Being Index with 34% ($n = 36$) scoring on or below the clinical cut-off score of 13 – indicating a need for further depression screening.
Conclusion: Patients in the intervention group overwhelmingly found the DMCT© tool helpful with their diabetes consultations and nurses' derived good practical use from the tool in determining the kinds of issues patients may have. The tool seems to have promoted a more patient centred approach to the consultation, empowering patients to discuss management aspects relevant to their individual needs. The results of this pilot indicate that the DMCT© is a feasible, practical tool for use by both patients and nurses. A larger and longer scale study in varied primary care settings to determine further efficacy and using measurable hard end points is now warranted.

Key words: Type 2 diabetes, Patient/nurse clinical encounter, Primary care, MyQuest Consultation tool

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Background

The clinical encounter between nurse and patient is an important and growing strategy in managing Type 2 Diabetes Mellitus (T2DM) in primary care settings.[1] This essential meeting has the potential to: enhance diabetes knowledge; increase patient empowerment; encourage the development of coping skills and satisfaction and promote good mental well-being[2]. All these factors may contribute to improved diabetes management and quality of life[3] but are understandably sometimes hard to recognise and address in clinical meetings.

Generally, there is a great deal of activity and complexity in the nurse/patient meeting (reviews of medication, complications etc.) which has been noted to be driven conventionally by the nurse's clinical agenda.[4] To counteract this, a patient centred approach is advocated to

*Correspondence to: Gillian Ann Hood, Barts and the London School of Medicine and Dentistry, Queen Mary University of London, UK.
Email: gill.hood@nihr.ac.uk

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establish common ground and language with patients; to assist in managing patient expectations; and to help promote realistic patient goals and decision-making.[5] Nurses are also expected to have further skills, such as motivational interviewing[6] techniques and other insights to assist patients in self-management.

Empowering patients to self-manage their diabetes can also be confounded by other psychosocial problems that people with diabetes may face, for example the stress involved in living with diabetes and its complications, work issues, financial problems and/or family life leading to a greater incidence of depression when compared with the general population.[7] As depression and T2DM are linked with even greater susceptibility to diabetes complications[8] and to overall poor diabetes self-management,[9] it is extremely important in the consultation, to identify poor mental well-being for immediate expert referral, and to generally support people in their self-management.

With such high expectations placed upon the nurse during the clinical encounter it is understandable that many of these meetings will fail to reach their full potential which may lead to dissatisfaction and frustration for both parties.[10] Identifying methods for improving support for both during clinical meetings should address factors such as the limited time for discussion; lack of diabetes knowledge on the part of nurse and/or patient; lack of specific diabetes nurse training and, the underlying emotional problems patients may have.

There are many different global and regional drivers to maximise the benefits and improve upon nurse/patient encounters[11,12], and the issue of improving the clinical encounter between patients and nurses is obviously multifaceted and cannot be tackled by any one method in isolation. Nevertheless this paper describes one such effort to improve the potential of the meetings through the utilisation of a questionnaire entitled The Diabetes MyQuest Consultation Tool© (DMCT©). The tool has been designed to assist consultations between nurses and diabetes patients, and is intended as a means to support both parties and to provide a structured, time-efficient framework to optimise diabetes patient self-care. Below we describe a pilot study with regard to the use of the DMCT©, in UK primary care settings.

Methodology

Questionnaire development

The DMCT© is the result of a European-wide collaboration between patients, healthcare professionals and industry. It combines clinical information already gathered in routine consultations, with approved psychological scales so that care planning goals, aspects of patient education/knowledge which may be lacking, or evidence of patient emotional distress, may be recognised and addressed. Both patients (the NE London Diabetes Research Lay Panel) and nurses have contributed considerably to its development.

DMCT© and pilot study design

The DMCT© is three pages long and is completed by patients prior to the consultation. Completion of the Tool should take no longer than 15 minutes.

Page one asks the patient to provide some basic information about themselves which is straightforward and guided. Some of this information may be demographic but most concerns the general health of the patient and certain diabetes information.

Page two introduces 16 statements asking patients to choose one rating per statement which best describes their diabetes self-management. Patients can choose from a rating system starting with 'none of the time' through to 'all of the time'. The aspects covered are general diabetes management, physical exercise and food management. In addition statements with regard to medication, blood testing and motivation to blood testing, hypoglycaemia and hyperglycaemia, and the need for further education and support from both family and health care professionals (HCPs) are also included.

Page three includes the World Health Organisation WHO-5 Well-Being Index,[13] and patients are asked to tick the box which is most appropriate to how they have been feeling over the last 2 weeks. The WHO-5 Well-Being Index has been selected because it is a well validated instrument, which is positively worded and easy to complete, and has already been translated into several languages. It can be used as a screening tool for depression, and has an established clinical cut-off as an indication for further testing. The tool covers the three key dimensions of psychological well-being: positive mood; vitality and general interests. . A score of below 13 is an indicator of poor well-being. The second part of page 3 encourages a discussion of the WHO-5 Well-Being score and any goals the patient may have recorded.

The chosen study design was a randomised control trial (RCT) stand-alone pilot using a mixed methodology. The qualitative pre and post interviews with both nurses and patients were the main integral measurement to the pilot to ascertain the feasibility of using the DMCT© by both parties within the primary care setting. Patients were required to self-complete the tool and the interviews explored whether the DMCT© was comprehensible and practical to use in a given time frame.

Some quantitative pre and post measures were also used to understand how the procedure might run in a larger scale RCT study and whether improvements in diabetes knowledge, satisfaction with the consultation and self-efficacy could be linked to those using the DMCT©.

Study aims and objectives

The DMCT© was piloted in eight primary care sites in the UK (two in Kent and six in Essex) with the aim of determining feasibility of the Tool and to improve upon the design for a full-scale research study in Europe. The primary objective of the pilot was to investigate the effectiveness and practicality of The DMCT© to facilitate and

increase diabetes knowledge; satisfaction with the consultation process (for patients and nurses), and patient self-efficacy. The secondary objective was to identify changes in well-being and indicators for possible depression. The third objective was to compare any change in HbA1c, from baseline to 3 months post-study.

Sample size and study eligibility

The sample size selected for the study was 100+ patients which is a reflection of other pilot studies using a similar intervention.[14] Patients were invited to participate in the study if they were 18 years or over with a diagnosis of T2DM for 1 year or more but with no upper limit of diabetes duration. Participants needed to have the ability to understand informed consent and complete the questionnaire and related measurement tools. Patients were excluded from the search if they had a present history of documented psychological problems. The response rate to the invitation was 47%.

Data collection and analysis

Data collection took place over three visits. At visit 1 consented patients completed the following pre-study measures: The Diabetes Knowledge Questionnaire (DKQ) – adapted from the MDRTC test[15] with kind permission of Anderson; The Diabetes Consultation patient–nurse interaction (DCPNI) form which measures satisfaction with the diabetes consultation (with kind permission of SS); and, The Diabetes Empowerment Scale – DES-SF[16] which measures diabetes related self-efficacy (with kind permission from R. Anderson). The researcher also obtained a minimum dataset and briefly interviewed participants with regard to their attitudes towards their current diabetes consultations.

Prior to visit 2, patients were randomly assigned by allocation concealment technique to receive either their routine diabetes consultation in their normal format (Control group) or to use The DMCT© in their routine diabetes consultation (Intervention group). Participants in the intervention group were sent The DMCT© 1 week before the scheduled clinic visit. Participants in the control group were sent the WHO-5 Well-being Index 1 week before attending their clinic and were asked to bring it to their scheduled diabetes appointment. The WHO-5 was scored and the researcher alerted practice staff if scorings indicated any emotional upset.

Visit 3 included repeating the pre-study measures of the DKQ, DCPNI and DES-SF together with a short follow up interview with the researcher. The practice nurses conducting the diabetes consultation were also interviewed pre and post intervention with regards to the consultation generally and the practicality of using the questionnaire.

Descriptive data, baseline and follow up measurements on DKQ, DCPNI and DES-SF were analysed in both Excel and SPSS. Interviews were recorded, transcribed and analysed using contextual and thematic analysis.

Research governance

Ethical permission to proceed with the pilot study was granted from London East Research Ethics Committee application number 12-L0-0100 and adopted onto the National Institute for Health Research (NIHR) portfolio (UK ID 11913).

Results

Baseline results are given below in Table 1. From 120 participants who consented to be in the study, seven were unable to attend the final visit, three were screening failures, and four others withdrew due to 'personal reasons'. In total, 106 participants went on to complete all study visits and 10 practice nurses were also recruited to the study.

The age range of the sample ($n = 106$) was 40–90 years ($m = 67$ years) and comprised of 66 males, and 40 females. The average duration of diabetes was 9 years, and at the pre-study visit the mean values for BMI, cholesterol and HbA1c were 30.7 kg/m^2; 4.2 mmols/l and 55.0 mmols/l, respectively. With regard to diabetes treatment 17% ($n = 18$) of the sample were diet controlled only, 66% ($n = 70$), were on OHAs and 3% (were on insulin) and 14% were on both. 73% of the sample was taking statin therapy. 80% of the sample reported having diabetes complications (68% macrovascular; 44% microvascular) and 80% of the group were living with other co-morbidities.

All participants were given the three pre and post measures to complete (Diabetes Knowledge (DKQ),

Table 1 Main baseline characteristics and pre-measure scores.

$N = 106$	Value
Male	66
Female	40
Age range	40–90 years ($m = 67$ years)
Diabetes duration	$m = 9$ years
BMI	$m = 30.7$ (weight/height^2)
Cholesterol	$m = 4.2$ (mmol/l)
HbA1c	$m = 55.0$ (mols/mol)
Diet controlled	17% ($n = 8$)
OHAs	66% ($n = 70$)
Insulin	3% ($n = 3$)
Insulin and OHA	14% ($n = 15$)
Statin therapy	71%
Diabetes complications	80%
Macrovascular complications	68%
Microvascular	44%
Other co-morbidities	80%
Diabetes Knowledge (DKQ) score (Maximum score = 22)	$m = 12.7$ (range 5–19)
Consultation satisfaction (DCPNI) score (Maximum Score = 51)	$m = 45.2$ (range 20–51)
Diabetes Empowerment Scale (DES-SF) score (Maximum Score = 40)	$m = 31.5$ (range17–40)
WHO 5 Well-Being Index – % of sample scoring below the clinical cut-off of 13 or below	34% ($n = 36$)

Satisfaction with the Consultation (DCPNI) and the Diabetes Efficacy Scale (DES-SF). The mean score for the DKQ was 12.7 (range 5–19) out of a maximum score of 22; for DCPNI the mean was 45 (range 20–51) out of a maximum score 51, and for DES-SF the mean score was 31.5 (range17–40) from a maximum score of 40. All participants completed the WHO-5 Well-Being Index with 34% ($n = 36$) of all participants scoring on or below the clinical cut-off score of 13 – indicating a need for further depression screening.

Completion of the DMCT© by the intervention group ($n = 56$) revealed further information about this subset. Of the 56 patients participating in the intervention arm 68% ($n = 38$) were unaware of their target HbA1c, 70% ($n = 39$) did not know their target blood pressure, and 60% ($n = 34$) did not know what cholesterol target they should be aiming for. With regards to foot health, only 44% ($n = 25$) of the sample checked their feet daily, 35% ($n = 20$) checked once a week, 19% ($n = 11$) checked 'sometimes' and 2% ($n = 1$) never checked their feet.

The comparison measures between groups both pre and post-study is given in Table 2.

There were no significant differences to HbA1c, Cholesterol or BMI between the control and intervention groups. There were minor but noted improvements in the control group between the pre and post measure for DKQ (mean increase 1.10; $p > 0.001$) whereas the intervention group demonstrated significant improved changes for all three measures: DKQ (mean increase = 1.41; $p > 0.000$), DCPNI (mean increase = 2.1; $p > 0.002$; DES-SF mean increase = 2.5; $p > 0.000$).

Qualitative results demonstrated a strong preference for using the tool, highlighting its empowering structure and guidance. Pre and post-study interviews were taped, transcribed and analysed using a thematic analysis or coding strategy.[17] Many of the emerging themes are provided in Table 3. Patients participating in the intervention group were also asked to rate the usefulness of the DMCT© on a scale from 0 to 10 with the average score being 8.4.

Usefulness of the questionnaire

There were positive statements from all those who used the DMCT© in terms of promoting discussion and focussing on other areas which might not have arisen from conventional clinical appointments. Some patients reported that they would have found this approach useful when they were first diagnosed.

> 'The consultation was better. I came out of the consultation feeling more assured. We talked about numerous different subjects connected with the overall condition. But yes, I was quite happy when I came out and felt more loved shall we say.'
>
> (TRP-008)

Practice nurse results

Ten practice nurses were consented into the study and nine had a post-study meeting with the researcher. Of the nine nurses, eight said they would use the DMCT© again for diabetes consultations and one nurse reported that she would like to adapt it for other long-term conditions. The majority of nurses thought the DMCT© was particularly helpful at the start of a consultation, highlighting lack of knowledge with regard to HbA1c etc. Some nurses felt it would be particularly useful for the newly diagnosed and one nurse also considered it would be useful for patients who had failed to attend their appointments for some time. Two nurses preferred to use existing or other designed templates. Nurses were asked to score on the usefulness of the DMCT© from 1 to 10. Scores ranged from 6.5 to 10, giving an average score of 8.

> 'I did discover it threw up some areas they had never mentioned before. Where you thought they were ok…, and they had been telling you that haven't had any problems and then all of a sudden they are ticking a box to say they were. That was quite interesting…'.
>
> (PN004)

Discussion

The results of this pilot study indicates that the DMCT© may be a feasible, practical tool for both patients and nurses to use. A larger and longer scale study in varied primary care settings to determine further efficacy and using measurable hard end points is now warranted.

Patients in the intervention group overwhelmingly found the tool helpful with their diabetes consultations and nurses' derived good practical use from the tool in determining the kinds of issues that patients may have. The tool seems to have promoted a more patient

Table 2 Comparison measures between control and intervention groups pre and post-study.

Measure	Control group pre-study (mean)	Control group post-study (mean)	Sig.	Intervention group pre-study (mean)	Intervention group post-study (mean)	Sig.
HbA1c	53.4	52.9	.875	56.9	56.5	0.697
Cholesterol	4.12	4.16	.658	4.27	4.12	0.123
BMI	29.7	29.6	.799	31.7	31.5	0.103
DKQ	12.38	13.48	.001	13.04	14.45	0.000
DCPNI	45.2	46.8	0.066	45.3	47.4	0.002
DES-SF	32.1	33.3	0.190	30.9	33.4	0.000

centred approach to the consultation, empowering patients to discuss management aspects relevant to their individual needs. This is in line with current programmes in the UK which encourage people with long-term conditions to work in partnership with their practitioners, and for those practitioners to change traditional reactive medical models of care to instead involve patients in a more collaborative care and support model.[17] We also attribute the high acceptability of the DMCT© to the involvement of many patients with diabetes in the questionnaire design.

Patients were able to complete the DMCT© quickly and easily, except for one participant, which may indicate that the tool is not suitable for all. Participants in the intervention group were happy with the increased range of management issues covered by the DMCT© in comparison to conventional consultations. The tool introduced new diabetes information which may not have been raised in previous clinical encounters, and many patients found this aspect of the tool 'thought provoking'.

One of the objectives of this pilot was to promote an increase in patient diabetes knowledge and this was seen to be the case in the interview themes but only partially supported by the results of the pre and post DKQ results for the intervention group. The results presented in Table 2 indicate that diabetes knowledge improved in both groups, not just the intervention group. According to some patients this may be indicative of a 'placebo like' influence of being involved in the research pilot, even as a control participant. It may also be indicative of this sample as a whole, who were interested in accessing the study to improve their diabetes knowledge and health generally.

Measuring improvements to knowledge through the use of DKQs are controversial[18] and the authors acknowledge that any improvements seen may be attributed to a whole variety of influences.[19] Nevertheless, in this pilot study both groups enjoyed completing the DKQ measure and were keen to increase their knowledge and test their own performance by requesting an answer sheet. Certainly, the DKQ stimulates a good deal of debate in patients completing it, and this in itself, may be helpful, if conducted by professionals in a supportive manner.

Patients using the DMCT© also demonstrated an increase in satisfaction with the consultation, and had increased scores on the empowerment scale. Table 2 demonstrates that the baseline measurements for satisfaction using the DCPNI were improved in the intervention group ($p > 0.002$) compared to the control group. There were also significant improvements in the DES-SF scale ($p > 0.000$) in the intervention group compared to those in the control group. It is noted for the entire cohort ($n = 106$) that baseline scores for satisfaction and self-efficacy were already very high and it could be argued that achieving any improvement in these two measures is therefore encouraging. The authors recommend that these two measures may be worth retaining in larger scale studies to indicate efficacy of the DMCT©.

The secondary objective of the pilot was to identify changes in well-being and indicators for possible depression. The DMCT© which includes the WHO-5 Well-Being Index received positive remarks from most of the sample. All participants were given an opportunity to complete this, whether as a control or an intervention participant because it was deemed unethical not to offer this measure to all patients. As 34% of the whole sample was identified as needing further attention in this regard there is confidence in recommending that the well-being marker is retained as an important part of the DMCT©.

The WHO-5 Well-Being Index (as part of the DMCT© and also as a stand-alone tool) allowed patients and nurses to address a subject (depression) which is often not discussed. Patients have been noted as sometimes being reluctant to disclose mental health issues and yet at the same time they may welcome the opportunity to do so.[20] In measuring certain self-management practices and also identifying both anxiety and depression tendencies the questionnaire can effectively determine barriers to self-care which can then be discussed and treated appropriately.

> 'It made me stop and look at myself, how I am actually feeling for example. I have not been cheerful and in good spirits more than half the time, so it has made me ask these questions with my nurse… I have shown this form to my family and they have been a bit more supportive as they have realised how much it's affecting me psychologically; whereas I don't think either of us, my family or myself, realised how much I could go through mentally with this sort of condition'.
>
> (TRP-018)

The third objective was to compare HbA1c levels, from baseline to 3 months post-study of which there were no significant changes. Although changes in HbA1C are often used as hard end points to studies it was not

Table 3 Themes arising from patient interviews.

Patient comments (pre-study discussion on diabetes consultations generally)	Randomised patient comments After using the DMCT©
• Practice nurse easy to talk to • Current high satisfaction with the consultation • Patients value information and reassurance from nurse • More information on diet and exercise needed • Worries about complications • Would like to test own blood glucose (glucometers now not given) • More frequent appointments desired	• Helps patients think about all aspects of diabetes • Reminds patients what they should be doing • Does not take long to complete • Many would use again • Welcome opportunity to discuss concerns • Raises issues not thought about previously • Thought provoking • Some confusion with certain questions (double negative)

possible to expect differences within this short space of time in this small pilot group. It must also be noted that the whole sample also had very good diabetes control to begin with (55 mols/mol) as people in the UK have measurements of HbA1c taken regularly. Within the UK, National Institute for Health and Care Excellence (NICE) guidelines exist for the management of T2D, which include HbA1c targets,[21] and in addition GPs are incentivised to lower HbA1c through computerised registers and quotas which attract bonus payments for those who can achieve the targets set (Quality Outcomes Framework (QOF targets).[22]

It has therefore been reasoned, that on the whole patients already had an acceptable HbA1c and that the range of improvement, if any, would be small and might necessitate high levels of patients in a subsequent study to prove the hypothesis. This has been corroborated by a number of recent studies where HbA1c was a primary endpoint with little or no change although patients were satisfied with the intervention.[23]

Future studies involving the DMCT© may want to consider use of HbA1c measurements as an indicator of success, but this will lengthen the study design and indicate the need for a robust power calculation to detect significant changes. Certainly, when the cost of adding other OHAs to patients' treatment is calculated for sometimes a very small reduction in Hba1c, applying a questionnaire as an alternative, which may have the same effect, but at little extra cost, becomes attractive. Long-term health conditions now take 70% of the health service budget in the UK and any tools which can reduce our medication budget and empower people to take a better control over their own care should be robustly supported.[24]

Finally, other points to consider include the added expense of posting the questionnaire to the patient in advance of the meeting. There have been suggestions that the questionnaire might be provided electronically either in the primary care reception or emailed to the patient in advance of the consultation. Naturally, we acknowledge that this is not suitable for all patients and in some countries especially in rural areas this may not be possible. A multiple way of presenting the DMCT© may now be warranted and require further testing but overall, we can conclude that participants in the pilot study were keen to use the tool and improve their diabetes self-management as a result.

Limitations

The authors acknowledge several limitations to the study. Although all people meeting the criteria of the study were invited it is difficult to get a cross sectional response representing those with poorer diabetes control to participate which may bias results. Another limitation is that the age group were representative of mainly older adults and not indicative of younger patients with diabetes. Although the interviewer was unknown to the sample group, and maintained a schedule for the interview, there is always the acknowledgement that patients may respond favourably to questions so as to 'please' the interviewer. In future studies this bias may be eliminated by computerised questionnaires.

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ORCiD

Gillian Ann Hood http://orcid.org/0000-0003-3325-1140

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