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Out-of-office hours nurse-driven acute telephone counselling service in a large diabetes outpatient clinic: A mixed methods evaluation

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ABSTRACT

Objective: To map the usage of out-of-office hours acute telephone counselling (ATC) provided by diabetes specialist nurses ($n = 18$) for diabetes patients to explore potentials for improvement.
Methods: A mixed methods study involved mapping of ATC-usage during 6 months and a retrospective audit of frequent users.
Results: Altogether, 3197 calls were registered that were related to 592 individual patients, corresponding to 10% of the population. Proportionally more users suffered from type 1 diabetes ($p < 0.001$). ATC-users' mean HbA_{1c} was 8.8% (73 mmol/mol) compared to 8.1% (65 mmol/mol) for all patients attending the clinic ($p < 0.001$). Hyperglycaemia was the most frequent reason for calling. The use of ATC likely prevented 15 admissions. More than half of the calls came from general nurses based in the community ($n = 619$) and general nurses and nursing assistants based in care homes ($n = 1018$). The majority (75%) of patients called less than five times. However, 8% called 16 times or more accounting for 52% of all calls. A retrospective audit identified them as physically and/or psychologically fragile patients.
Conclusion: Hyperglycaemia was the most frequent reason for calling, and insulin dose adjustment the most frequent advice given.
Practice implications: Frequent users identified need additional support.

1. Introduction

Patients with diabetes followed in outpatient clinics are generally seen two-to-four times a year, when they are offered an assessment of glycaemic control, advice concerning self-management, screening for complications and adjustment of treatment. Between these visits, patients have to cope with the responsibility for their illness and glycaemic control on their own; this requires many decisions in daily life [1,2]. Occasionally, however, the patients might need counselling due to acute problems, which they consider urgent and which they are unable to manage by themselves [3–5]. Patients might receive support from their relatives [6]. In cases where the patients are unable to manage their diabetes themselves, they will receive occasional help with medication, i.e., injection of insulin and monitoring of blood glucose in their home from general nurses based in the community. Diabetes patients living in care homes receive 24 h help regarding activities of daily living and help with medication from general nurses or nursing assistants based in the care home [4,7]. The lay helpers and the general nurses might, however, not be well acquainted with diabetes management [8]. Telephone counselling from a diabetes specialised service might represent a way to offer support and to bridge the gap between clinical appointments by following up on initial treatments and by supporting patients, their relatives, general nurses based in the community or general nurses and nursing assistants based in care homes in handling acute situations [9–11]. The opportunity to call

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such a service has the potential to be a positive experience to support user confidence in managing diabetes by themselves and to enhance and build self-management skills [5,12,13]. On-going self-management support is particularly needed for patients treated with insulin and for patients with poor glycaemic control [14,15]. Considering that acute situations are often related to hypo- or hyperglycaemia, as well as the need for self-management support, diabetes specialist nurses (DSN) are likely to represent a resource in this domain of care [16,17]. Several studies have performed an evaluation of interventions providing telephone counselling during office hours at predefined time intervals relevant to the medical treatment [3,9,18]. However, acute telephone counselling (ATC) during out-of-office hours is poorly described. As acute situations naturally occur, particularly during evenings, nights and weekends, out-of-office hour counselling can be necessary. At a large Danish diabetes outpatient clinic, a DSN-driven out-of-office hours ATC has existed for more than two decades without systematic evaluation. Consequently, an investigation concerning users of ATC was initiated. In addition, types of services requested and provided by ATC were also investigated. It was assumed that ATC was used by a large proportion of the patients and was perceived to be supportive. However, it was hypothesised that ATC was utilised more frequently by some of the users and, in some cases, for non-acute reasons and perhaps without attending properly to their needs. Therefore, the aim of this study was twofold: (a) to map the usage of ATC and (b) to explore potential for improvements of the service.

2. Materials and methods

Patients who were potential ATC users attended Steno Diabetes Centre (SDC), a diabetes specialist hospital that serves as an integrated part of the public health system. The population at SDC consisted of 3400 adult patients with type 1 diabetes (T1D), 2500 with type 2 diabetes (T2D) referred to the hospital according to severity, and 240 patients with other types of diabetes. In addition, relatives, general nurses based in the community or general nurses and nursing assistants based in care homes providing care to these patients were potential ATC users. Information about ATC was supposed to be provided at the first visit to the outpatient clinic and was also available in the waiting area and on the hospital's homepage (www.steno.dk). On weekdays from 4:00 p.m. to 8:00 a.m. and during the weekend, patients could call the outpatient clinic. A DSN answered the calls at the hospital in the evenings and nights during weekdays and from home during the weekend using a cell phone to where all calls were transferred. The DSN had access to the electronic medical records, and a diabetologist could be contacted by telephone if the DSN considered this necessary.

To evaluate ATC, a sequential explanatory mixed methods study [19,20] was conducted between January 2011 and September 2012. Initially, a registration form was developed for a 6-month prospective quantitative registration of the calls to ATC. During the study period, the nurses who provided counselling for ATC systematically registered information in relation to each call on this form. The registered data included information on the date, time and source of the call (i.e., the patient, a relative, a general nurse based in the community or a general nurses or nursing assistant based in a care home); reasons for the call (i.e., hypo- or hyperglycaemia, sickness, or psychosocial issues related to diabetes); and the service provided by the nurse (i.e., advice on insulin dose or blood glucose measurements, and any support provided). Additionally, the registration form included an assessment of the considered risk of actual acute admission to hospital. Furthermore, if the nurse contacted the diabetologist for advice, this was registered. Following all contacts to the ATC a note was made in the electronic medical record documenting reasons for the call and advice given/actions taken, including consultation with the diabetologist. If the nurse or diabetologist considered that the patient might be at risk of admission to hospital; a follow-up contact was agreed within a few hours in order to assess if, i.e., ketonuria had declined, hypoglycaemia reversed, etc. If this was not the case, admission to hospital was arranged. The assessment whether an admission was avoided was thus based on an interpretation of what would have happened if the patients had not contacted ATC and received advice. Thus this has been a qualitative assessment.

The results from the quantitative registration generated information on the diversity of users in terms of the frequency and purpose of use and, in addition, what types of services were requested and provided. Information on diagnosis, HbA_{1c}, age, gender and insulin administration was retrieved from the patients' electronic medical record.

Based on the number of calls, a qualitative investigation was performed on patients with frequent ATC calls ($\geq$16). A retrospective audit of these patients' case notes [21–23] was performed by two of the authors to further characterise this group of patients. In addition, the care provided was evaluated to investigate potential needs of improvements in the service and to establish appropriate interventions in this group of patients if possible.

Eighteen nurses with 2–21 years of experience within the field of diabetes provided ATC during the study period. DSNs have a bachelor degree in nursing followed by a minimum of 2 years of practical training in the field of nursing. In addition they attend 2 years of local training in diabetes care including a diploma module in a related field, e.g., health promotion or health education. DSNs are not licenced to prescribe insulin but have received training in adjusting insulin doses within a range of 25% of the prescribed amount without consulting a diabetologist.

2.1. Statistics

Frequencies and proportions were calculated in SPSS. A non-parametric test (Mann–Whitney *U*-test) was used to compare the HbA_{1c} levels of users and non-users and the differences among groups of users.

2.2. Ethical considerations

All of the ethical considerations required in Denmark were met. The data were treated as confidential, and the entire study was approved by the Danish Data Protection Agency (J.nr. 2011-41-5773).

3. Results

In total, 3391 calls were registered using the registration form. Of these, 194 (approximately 5% of all calls during the study period) were not filled in correctly (e.g., name missing or lack of information in relation to the purpose of the call or action taken) or could not be connected to a specific patient attending SDC. Consequently the number of calls with adequate registrations was 3197, which was related to 592 individual patients and was equal to 10% of the patients attending SDC.

The calls to ATC were more frequently related to patients with T1D (10.9% of those attending the out patients clinic) compared to 8.0% of patients with T2D ($p < 0.001$). Among the users with T2D, 88% were treated with insulin compared to 72% of all patients with T2D attending SDC. The average HbA_{1c} levels for the ATC users were 8.8% (73 mmol/mol) compared to 8.1% (65 mmol/mol) of all of the patients seen at SDC ($p < 0.001$). Table 1 shows the characteristics of the patients who were ATC users.