# A Systematic Review of Attrition from Diabetes Education Services: Strategies to Improve Attrition and Retention Research

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## ABSTRACT

Attrition from diabetes education programs has received little attention in the empirical literature, even though rates tend to be high across programs. Given the time and money invested in the structuring of these interventions and their acknowledged benefits for diabetes self-care behaviours and overall health outcomes, it is imperative that we understand why people choose to disengage from these initiatives. A systematic literature review was conducted to examine studies that investigated factors associated with attrition in existing diabetes education services. Results showed varied proportions of individuals with diabetes dropping out, from 4 to 57% across Britain, the United States, Ireland, Canada and Japan. Most studies did not find an association between sex, age, body mass index or years since diagnosis of diabetes, and attrition or missed appointments; however, 2 studies found an association between working status and attrition. Inconsistent results were found for primary language spoken, smoking status, symptomatology, type of diabetes management, glycosylated hemoglobin, blood pressure, comorbidities and distance travelled to the clinic. Sparse literature and diverse research methods across studies make it difficult to conclusively outline factors that influence attrition from diabetes education programs. The use of more rigorous research methods and standardized measurement would assist in the assessment of attrition from diabetes education programs

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## RÉSUMÉ

Il est peu question des taux d'attrition des programmes de formation diabétique dans la littérature empirique, même s'ils semblent élevés pour tous les programmes. Compte tenu du temps et des fonds investis dans l'élaboration de telles interventions et de leurs avantages reconnus pour ce qui est de l'auto-surveillance du diabète et des résultats globaux sur la santé, il est impératif de comprendre pourquoi les gens décident d'abandonner. Une analyse documentaire a été effectuée pour évaluer les études sur les facteurs d'attrition des programmes de formation diabétique actuels. Les résultats ont montré que les taux d'attrition varient de 4 % à 57 % au Royaume-Uni, aux États-Unis, en Irlande, au Canada et au Japon. La plupart des études n'ont pas décelé de lien entre l'attrition et les rendez-vous manqués, d'une part, et le sexe, l'indice de masse corporelle et l'ancienneté du diagnostic, d'autre part. Les résultats ont été incohérents pour ce qui est de l'âge, de la principale langue parlée, de l'emploi, de l'usage ou non du tabac, des symptômes, des maladies concomitantes, de l'hémoglobine glycosylée, du type de prise en charge du diabète et de la distance de la clinique. En raison du peu de documentation et des méthodes de recherche variées d'une étude à l'autre, il est difficile de cerner irréfutablement les facteurs qui entrent en jeu dans l'attrition des programmes de formation diabétique. L'usage de méthodes de recherche plus rigoureuses et de mesures normalisées faciliterait l'évaluation de l'attrition de ces programmes à l'échelle mondiale. L'article traite aussi de recommandations sur la façon d'améliorer la recherche dans ce domaine.

**MOTS CLÉS**

Formation diabétique, participation des patients, attrition, persévérance

worldwide. Recommendations on how to improve future research in this area also are discussed.

**KEYWORDS**

Attrition, diabetes education, patient participation, retention

## INTRODUCTION

Diabetes self-management education (DSME) is now recognized as a valuable resource that helps individuals participate actively in their own diabetes management and care. Despite the acknowledged benefits of DSME for improving self-care behaviours and glycemic control (1-10), these interventions are inadequately attended (11,12) and have high attrition rates when reported (2,13,14). Attrition from diabetes education services is of great concern, because patients who drop out prematurely tend to adhere less conscientiously to self-management activities, have worse glycemic control and are at higher risk for complications than those who continue with the recommended education and follow-up. For this reason, the public health impact of diabetes education interventions depend on program reach and retention, irrespective of program efficacy (15-17).

Whitehouse et al retrospectively observed that over a 5-year period, 90 of the 178 patients who declined an invitation to attend outpatient diabetes education follow-up sessions after hospitalization had significantly higher hospital readmission rates than patients who did attend such sessions (18). A case-control study by Hammersley et al also showed that patients who did not attend the hospital diabetes clinic in 1982 – after a planned review had been arranged between 1971 and 1981 – developed significantly higher diastolic blood pressure (BP) and glycosylated hemoglobin (A1C) concentrations, were more obese and had more neuropathy and retinopathy at reassessment than patients who continued to attend the clinic (19).

Taking a different approach, Archibald et al compared the medical records of 37 regular attendees and 37 nonattendees (those who failed to attend follow-up appointments for an average of 26 months and were later referred back to the diabetes clinic). Nonattendees had significantly worse glycemic control and more micro- and macrovascular complications than their regularly attending counterparts (20). Most of these complications arose during the period of default and frequently led to patients being referred back to the clinic. In fact, re-referrals made up 19% of new patients. Moreover, these results demonstrate that defaulting may create a rebound effect of repeated referrals, causing a considerable increase in clinic workload and long-term costs. In another retrospective study of individuals with type 2 diabetes, defaulters had a significantly higher body mass index (BMI), higher BP, and worse lipid profiles and fasting glucose levels than patients regularly attending the diabetes clinic over a 20-month period. Although A1C was not significantly different between the 2 groups, fewer defaulters remained on the recommended diet or exercised regularly than those who continued to attend the clinic (21).

There is also evidence that patients who regularly miss diabetes education appointments are more likely to have poorer glycemic control than those who regularly attend. In a diabetes self-management clinic, Rhee and colleagues retrospectively found, while controlling for demographic and clinical factors, that keeping scheduled appointments between the initial visit and 1 year follow-up at a diabetes management clinic was a significant predictor of lower A1C levels. In fact, A1C levels were 0.12% lower for every additional appointment kept (22). The association between attrition or infrequent attendance and adverse clinical outcomes in persons with diabetes is consistent across the literature. What is less clear, however, is what influences a person's decision to discontinue recommended diabetes education services or use them less frequently. This paper is a review of the scientific literature for the rates of and factors contributing to attrition from diabetes education services.

## METHODOLOGY

Literature regarding attrition from education interventions refers to attrition from either diabetes clinics or diabetes education programs/centres, which are 2 separate entities. Diabetes clinics are usually physician-led and may provide access to diabetes educators (i.e. nurses and dietitians); they may also offer diabetes classes in some form. On the other hand, diabetes education programs/centres provide education and management training that is usually led by diabetes educators and may provide access to endocrinologists, social workers, behavioural therapists and chiropodists. These programs also offer diabetes education counselling and/or education classes. Because of the overlap in education services delivered by these 2 entities, this systematic literature review will assess attrition rates from both services. For the purposes of this paper, these services will be referred to as diabetes education services.

A literature search was conducted to gather information on the factors underlying patient attrition or missed appointments/classes in existing diabetes education services, irrespective of study design and quality, methodology, setting or type of diabetes. The search strategy involved the use of keywords such as *participation, attrition, retention, dropout, defaulter, no show, attendee, nonattendee, lost to follow-up, missed appointment* or *broken appointment,* along with *diabetes, chronic diseases, self-management, education, clinic, program, intervention* and *health services*.