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Research letter

Psychosocial determinants of non-adherence to antidiabetic drug treatment: A prospective cohort study

Introduction

Adherence to antidiabetic drug treatment is essential to optimize glycaemic control and prevent diabetes complications. However, poor adherence to antidiabetic treatments is common.

Medication adherence is a health behaviour that can be influenced by psychosocial, demographic, clinical, medication and disease-related determinants. Understanding which of these determinants may be modified to significantly influence medication adherence is necessary to design sound interventions aimed at improving adherence.

Studies that assessed the psychosocial determinants of non-adherence to antidiabetic drug treatment (i.e., the most modifiable determinants) were cross-sectional [1,2], making it impossible to establish a causal relationship between predictors and adherence. In addition, research has outlined the importance of past behaviour in the adoption of later behaviour [3]. However, in studies that assessed the psychosocial determinants of non-adherence to antidiabetic drug treatment, past adherence was not accounted for [1,2].

Therefore, we conducted a prospective study aimed at identifying psychosocial and other determinants of non-adherence to antidiabetic drug treatment among individuals with type 2 diabetes.

Research design and methods

Theoretical framework

We used the Theory of Planned Behaviour (TPB), developed by Ajzen [4], as a framework to design the present study. This theory which has shown good ability to predict health behaviours, stipulates that the direct determinants of behaviour are the intention and the perceived behavioural control of the person adopting the behaviour [4]. Intention is influenced by perceived behavioural control, subjective norms and attitude towards the behaviour. Perceived behavioural control, attitude and subjective norms are influenced by control beliefs, normative beliefs and behavioural beliefs, respectively [4]. We expanded the TPB with other psychosocial variables that have been demonstrated to directly influence behaviours. These are self-identity (i.e., the extent to which performing the behaviour is an important component of a person's self-concept) [5], habit in performing the behaviour (i.e., here, habitual use of drugs), past behaviour (i.e., past adherence to treatment) [3], action planning (i.e., specification of when, where and how to perform the behaviour) [6] and coping planning (i.e., specification of self-regulation strategies to overcome barriers such as anticipated risk situations) [6].

Study design

We conducted a prospective cohort study. Participants filled out a web-based survey between December 2012 and February 2013. Next, we obtained participants' pharmacy data covering the 12-month period before and following participation in the study.

Population and sample

The study population was composed of members of *Diabète Québec*, a provincial association of individuals with diabetes. In total, 6258 adults with diabetes (type 1 or 2) were members of the association at the time of the survey and had valid email addresses on their member profiles. We asked the association to email those members an invitation to take part in a web survey (in French). Those who logged into the web survey and confirmed that they had type 2 diabetes and were currently prescribed at least one non-insulin antidiabetic drug (NIAD) were eligible for the study. Our sample was composed of all participants with complete survey and pharmacy data.

Data sources

Regarding the web survey, participants answered questions on socio-demographic, clinical, diabetes-related, medication-related and psychosocial variables. A complete description of the web-survey is provided elsewhere [7].

The Quebec public health insurance board (RAMQ) supplied pharmacy data for participants covered by the public drug plan, while the reMed registry was used for those covered by private drug insurance. These data sources contained similar and valid information on drugs claimed/refilled (date of supply, drug identity and number of days' supply).

Variables

Adherence to antidiabetic drug treatment

Using drug claims/refills data, we measured adherence to antidiabetic drug treatment as the proportion of days covered (PDC) by at least one antidiabetic drug in the fixed 90-day period following the completion of the survey by each participant. We considered non-adherence to be participants who had a PDC $< 90\%$.

Potential determinants of non-adherence to treatment

We measured intention to adopt the behaviour and perceived behavioural control using scales proposed by Ajzen. We assessed

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Table 1
Characteristics of the 717 study participants.

Characteristics	Total (n = 717)	Adherent (n = 614)	Non-adherent (n = 103)
	n (%)	n (%)	n (%)
Socio-demographics			
Mean age (SD)	63.6 (9.0)	64.1 (8.4)	60.4 (11.6)
Sex			
Male	415 (57.9)	364 (59.3)	51 (49.5)
Female	302 (42.1)	250 (40.7)	52 (50.5)
Education			
High school not completed	244 (34.0)	209 (34.0)	35 (34.0)
High school completed	116 (16.2)	98 (16.0)	18 (17.5)
College completed	88 (12.3)	77 (12.5)	11 (10.7)
University completed	265 (37.0)	227 (37.0)	38 (36.9)
Not reported	4 (0.5)	3 (0.5)	1 (1.0)
Work schedule			
Does not work	372 (51.9)	323 (52.6)	49 (47.6)
Day schedule	157 (21.9)	132 (21.5)	25 (24.3)
Other	184 (25.7)	156 (25.4)	28 (27.2)
Not reported	4 (0.5)	3 (0.5)	1 (1.0)
Family income (gross, in Canadian $)			
<30,000	101 (14.1)	81 (13.2)	20 (19.4)
30,000–49,999	174 (24.3)	152 (24.8)	22 (21.6)
50,000–79,999	182 (25.4)	152 (24.8)	30 (29.1)
≥80,000	151 (21.1)	134 (21.8)	17 (16.5)
Not reported	109 (15.2)	95 (15.5)	14 (13.6)
Number of persons in household (including the participant)			
1	173 (24.1)	144 (23.5)	29 (28.2)
2	453 (63.2)	403 (65.6)	50 (48.5)
≥3	87 (12.1)	64 (10.4)	23 (22.3)
Not reported	4 (0.5)	3 (0.5)	1 (1.0)
Drug insurance plan			
Public	434 (60.5)	378 (61.6)	56 (54.4)
Private	277 (38.6)	231 (37.6)	46 (44.6)
Not reported	6 (0.8)	5 (0.8)	1 (1.0)
Social support			
Low	30 (4.2)	25 (4.1)	5 (4.9)
Medium	340 (47.4)	290 (47.2)	50 (48.5)
High	343 (47.8)	296 (48.2)	47 (45.6)
Not reported	4 (0.5)	3 (0.5)	1 (1.0)
Smoking			
Never	229 (31.9)	186 (30.3)	43 (41.8)
Former	446 (62.2)	390 (63.5)	56 (54.4)
Current	38 (5.3)	35 (5.7)	3 (2.9)
Not reported	4 (0.5)	3 (0.5)	1 (1.0)
Clinical characteristics			
Body mass index			
<30	350 (48.8)	298 (48.5)	52 (50.5)
≥30	363 (50.6)	313 (60.0)	50 (48.5)
Not reported	4 (0.5)	3 (0.5)	1 (1.0)
Mental health			
Excellent/very good/good	681 (95.0)	585 (95.3)	96 (93.2)
Fair/poor	32 (4.5)	26 (4.2)	6 (5.8)
Not reported	4 (0.5)	3 (0.5)	1 (1.0)
Depression or major depressive disorder			
Yes[a]	47 (6.6)	39 (6.3)	8 (7.8)
No	666 (92.9)	572 (93.2)	94 (91.2)
Not reported	4 (0.5)	3 (0.5)	1 (1.0)
Anxiety			
Yes[b]	46 (6.5)	40 (6.5)	6 (5.8)
No	667 (93.0)	571 (93.0)	96 (93.2)
Not reported	4 (0.5)	3 (0.5)	1 (1.0)
Diabetes- and medication-related characteristics			
Median diabetes duration (Q1–Q3), in years	9.5 (4.4–15.5)	10.4 (5.4–16.5)	5.4 (1.6–10.5)
Perceived side effects with NIADs			
Yes	95 (13.2)	75 (12.2)	20 (19.4)
No	622 (86.8)	539 (87.8)	83 (80.6)
Number of different NIADs			
1	386 (53.8)	311 (50.7)	75 (72.8)
2	243 (33.9)	218 (35.5)	25 (24.3)
3–4	88 (12.3)	85 (13.8)	3 (2.9)
Type of NIADs			
Metformin alone	332 (46.3)	270 (44.0)	62 (60.2)
Sulfonylurea alone	11 (1.5)	7 (1.1)	4 (3.9)
Metformin + sulfonylurea	131 (18.3)	118 (19.2)	13 (12.6)
Other	243 (33.9)	219 (35.7)	24 (23.3)
Use of weekly pill box			
Yes	521 (72.7)	455 (74.1)	66 (64.0)
No	192 (26.8)	156 (25.4)	36 (35.0)