Learning from a pilot study investigating the impact of frailty on glycaemia in older adults with type 1 diabetes

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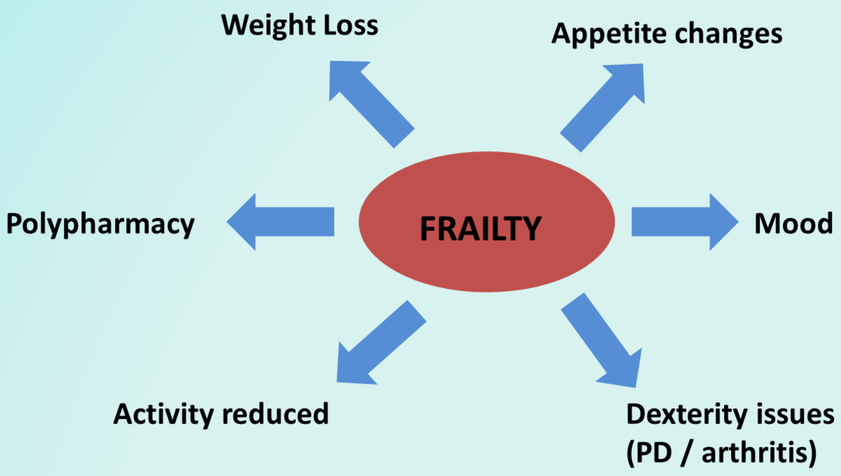
Background

Frailty is an ageing-related syndrome of physiological decline, characterized by a vulnerability to adverse health outcomes. Advancements in diabetes care have meant an increasing number of people with type 1 diabetes (T1DM) are reaching older ages, and so becoming potentially exposed to the consequences of frailty. Frailty complicates diabetes management particularly due to hypoglycaemia. Although clinician awareness of this new problem is increasing, research into frailty in older adults with T1DM is limited.

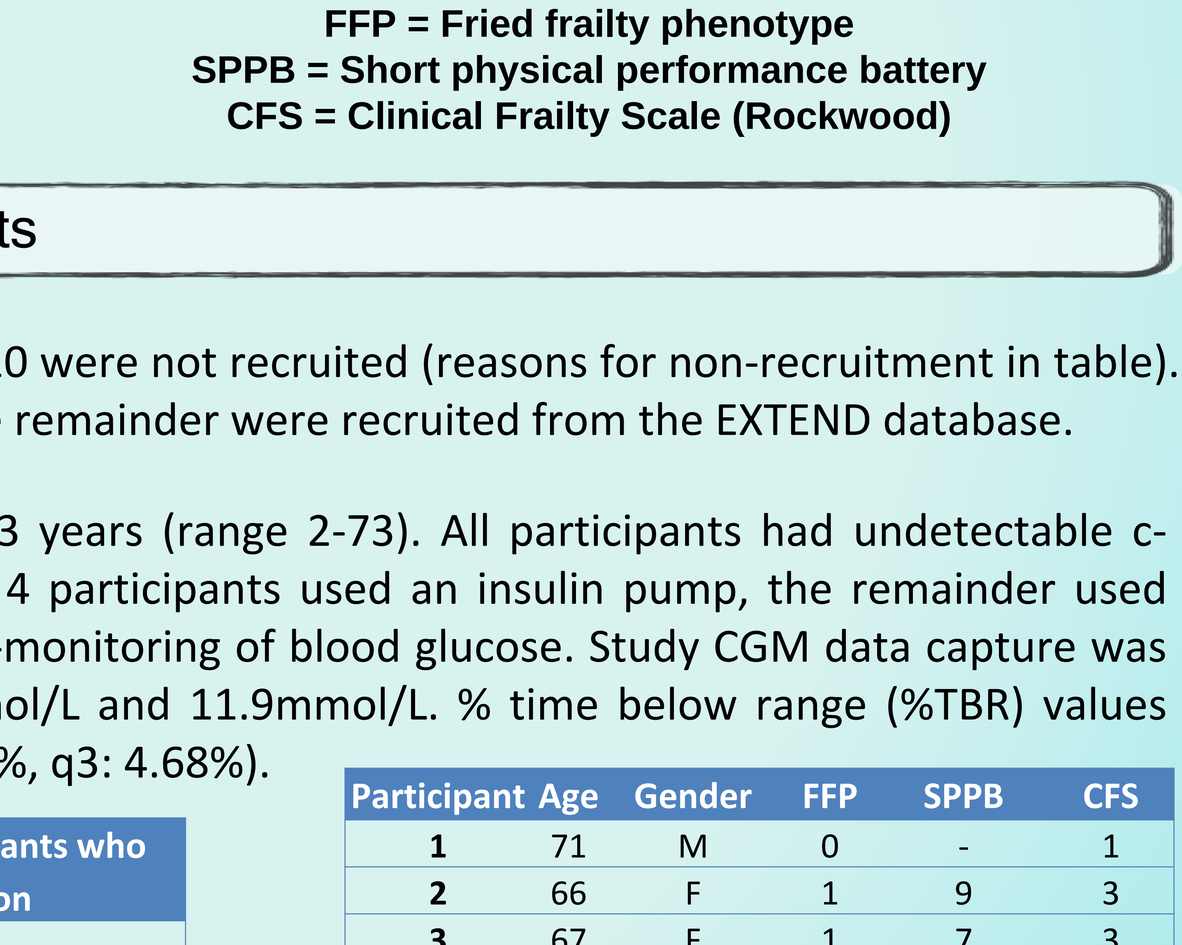


Aim

To assess the protocol and recruitment strategy, to plan a larger scale study investigating older adults with T1DM and varying degrees of frailty.

Methods

Recruitment was from diabetes clinics, or via a research database of individuals expressing interest in future studies (EXTEND).



FFP = Fried frailty phenotype
SPPB = Short physical performance battery
CFS = Clinical Frailty Scale (Rockwood)

Results

Recruitment

Recruitment was completed in good time. Of 20 clinical referrals, 10 were not recruited (reasons for non-recruitment in table). 5 of these would have participated if home visits were offered. The remainder were recruited from the EXTEND database.

Study procedures

20 participants were recruited, median diabetes duration was 43 years (range 2-73). All participants had undetectable c-peptide confirming T1DM and completed the study procedures. 4 participants used an insulin pump, the remainder used multiple dose insulin therapy. 14 used open CGM and 6 used self-monitoring of blood glucose. Study CGM data capture was 87.8% (range 20%-100%). Mean glucose ranged between 6.5mmol/L and 11.9mmol/L. % time below range (%TBR) values ranged between 0% and 12.3%, median %TBR was 2.62% (q1: 0.43%, q3: 4.68%).

Reason for declining participation	Number of potential participants who declined for this reason
Mobility issues	2
Caring responsibilities limited time	2
Concerns about capacity to consent	2
Remained in hospital during study	1
Declined after hearing study procedures	1
Felt research not relevant to them	1
Lived too far away / travel issues	1
Passed away before contacted	1

Participant	Age	Gender	FFP	SPPB	CFS
1	71	M	0	-	1
2	66	F	1	9	3
3	67	F	1	7	3
4	77	M	1	12	1
5	76	F	1	7	4
6	74	F	1	9	1
7	71	F	1	10	1
8	69	F	2	5	3
9	76	F	1	10	1
10	67	F	1	11	2
11	75	M	0	8	1
12	79	F	1	11	2
13	85	F	0	10	3
14	70	M	1	12	1
15	73	F	1	11	2
16	71	F	1	7	2
17	68	F	0	12	1
18	69	F	0	9	2
19	68	F	1	8	3
20	71	M	0	11	2

Frailty scores:
FFP – max = 5 ≥3 indicates frailty.
SPPB – max = 12, ≤9 indicates frailty.
CFS - maximum = 9, ≥4 indicates frailty

Summary

The protocol was feasible and acceptable with recruitment targets reached. However, frailty was not found in any participant. Consequently, assessing the relationship between frailty and hypoglycaemia was not possible. A larger study is in development with the following modifications to improve recruitment of those living with frailty: Including the option of home visits for those with mobility issues; targeting older individuals; and using routinely collected data in the UK, such as the electronic frailty index (eFI), to purposively recruit individuals who are likely to be living with frailty.