Medication patterns by glucose levels in the North West Adelaide Health Study

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INTRODUCTION

People with diabetes often take many medications. Polypharmacy is common. Little is known on the medication patterns according to the glucose level in the general South Australian population. The objective of this study is to assess such patterns utilising data from the North West Adelaide Health Study (NWAHS).

METHODS

All households within the north west region of Adelaide, with a telephone connected and the number listed in the Electronic White Pages were eligible for selection in the North West Adelaide Health Study. The original sample (n=4060) was randomly selected and recruited by computer assisted telephone interview in 2000-2003 (Stage 1) to participate in a clinic assessment. Within each household, the person who had their birthday last and was aged 18 years or older, was selected for interview and invited to attend the study clinic. The response rate for Stage 1 was 49.4%.

The second stage of data collection for this cohort was undertaken between 2004 and 2006. Of the original living cohort, 3564 (90.1%) participants provided some Stage 2 information, and 3206 (81.0%) attended the clinic for their second visit, with diabetes status at follow-up obtained for 78.3% (n=3180) of the original participants. Fasting plasma glucose (FPG) was measured at Stage 1 and Stage 2.

At Stage 2, participants were asked to bring their current medications to the clinic. Information from the medication container labels and a series of structured questions concerning each medication was then asked. Polypharmacy was defined as having four more prescribed medications. Complementary alternative medicine (CAM) and prescribed medicine were analysed separately.

Data were weighted by age, sex, area of residence and probability of selection in the household to ensure that the sample was representative of the north west population.

RESULTS

The mean numbers of prescribed medications were 1.6, 2.8, 4.0, and 4.7 across each level of FPG (<5.6, 5.6-6.0, 6.1-7.0 and >7.0 mmol/l respectively (p<0.001)) (Table 1). However, there was no significant difference in the mean number of CAM across each FPG level. In all FPG groups, the mean was approximately 0.5.

In total, 52.5%, 44.5%, 34.1% and 17.6% of those with FPG>7.0 use metformin, statins, sulfonylureas and insulin respectively; the corresponding figures were 14.5%, 38.9%, 11.5% and 5.0% among those with FPG between 6.1 and 7.0 (Table 2).

Aspirin use was about 30% among those with FPG above 6.1 mmol/l.

Across the four levels of FPG, the prevalence of use of ACE inhibitor was 6.0%, 15.4%, 18.3% and 19.7% respectively. Polypharmacy was common among those with FPG>6.1 mmol/l (50% used ≥4 medications).

Table 1. Mean (SE) number of medication by FPG levels (mmol/l) in Australian adults

	<5.6 (n=2810)	5.6-6.0 (n=166)	6.1-7.0 (n=94)	>7 (n=110)	p
CAM use	0.5 (0.02)	0.5 (0.08)	0.5 (0.11)	0.5 (0.09)	0.203
Prescribed medication	1.6 (0.05)	2.8 (0.22)	4.0 (0.37)	4.7 (0.32)	<0.001

Table 2. Use of selected medications (%) by FPG levels in Australian adults

	<5.6 (n=2810)	5.6-6.0 (n=166)	6.1-7.0 (n=94)	>7 (n=110)
Insulin	0.0	1.4	5.0	17.6
Statins	9.9	24.1	38.9	44.5
Metformin	0.0	6.3	14.5	52.5
ACE inhibitor	6.0	15.4	18.3	19.7
Beta blocker	4.4	11.8	16.8	13.3
Sulfonylurea	0.2	3.9	11.5	34.1
Sartans	5.4	11.2	18.8	22.3
Aspirin	7.0	21.6	30.2	30.3
Polypharmacy	15.8	31.6	50.9	55.9

Higher glucose level was independently associated with the risk of polypharmacy. In multivariate logistic regression adjusting for age, gender, income, smoking, alcohol drinking, odds ratio and 95% CI for polypharmacy were 1, 1.24 (0.84-1.84), 2.63 (1.71-4.05), 3.93 (2.66-5.82) (p<0.001) across levels of FPG from low to high.

CONCLUSIONS

Polypharmacy was common among those with abnormal FPG level. Register, monitoring and reviewing medication use is an important part of diabetes care.