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Correlates of family involvement before and during medical visits among older adults with high-risk diabetes

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What's new?

• Patients with diabetes often bring companions to medical visits, but family members may also support patient engagement in other ways, including helping prepare for visits.
• In a large sample of patients in the Veterans Health Administration system with diabetes, among those with a family health supporter, more patients had regular support for visit preparation (69%) than were regularly accompanied (45%) by the supporter.
• There was no association between type of support for medical visits and concurrent trends in medication adherence, blood pressure or glycaemic control.
• Most patients with diabetes report family member involvement in medical visits; interventions to mobilize the potential of this support could be developed and tested.

Abstract

Aims To examine the characteristics of patients with diabetes who regularly receive help from a supporter in preparing for and attending medical visits, and the association between this help and clinical risk factors for diabetes complications.

Methods We linked survey data about family involvement for patients in the Veterans Health Administration system with poorly controlled Type 2 diabetes (*n*=588; mean 67 years; 97% male) with health record data on blood pressure, glycaemic control and prescription-fill gaps. We used multivariable regression to assess whether supporter presence and, among patients with supporters, supporter role (visit preparation, accompaniment to medical visit or no involvement) were associated with concurrent trends in clinical risk factors over 2 years, adjusting for sociodemographic and health characteristics.

Results Most patients (78%) had a main health supporter; of these, more had regular support for preparing for appointments (69%) than were regularly accompanied to them (45%). Patients with preparation help only were younger and more educated than accompanied patients. Support presence and type was not significantly associated with clinical risk factors.

Conclusions Family help preparing for appointments was common among these patients with high-risk diabetes. In its current form, family support for medical visits may not affect clinical factors in the short term. Supporters helping patients engage in medical visits may need training and assistance to have an impact on the clinical trajectory of patients with diabetes.

Introduction

Family members (including relatives and close friends) are uniquely poised to provide personalized, ongoing support for diabetes management. Guidelines for patient-centred care recognize family members as a key part of the healthcare team [1,2], but little is known about how family members help patients with diabetes navigate medical visits. Most research on family support for medical care has focused on medical visit accompaniment. Visit companions may facilitate patient–provider communication, participate in medical decision-making, navigate health system logistics, and provide emotional support to patients [3,4]. While there is emerging evidence that being accompanied to visits is associated with better patient-reported self-care [5], to our knowledge, no previous study has examined whether supporters' participation in visits is linked to better outcomes among patients with diabetes.

Additional ways that family members could enhance the impact of patients' medical visits have not been explored. In particular, patients who prepare effectively before appointments are more activated during the visit, communicating more effectively with providers and engaging in shared decision-making [6,7]; therefore, well-prepared patients may be better poised to implement diabetes self-care plans. Existing interventions to help patients prepare for visits have mainly involved professional coaches [6,7]. These programmes have focused on prioritizing questions, preparing for important decisions, and gathering information to bring (e.g. home test results). It is unknown how many patients with diabetes get help from family members with visit preparation or whether this help is associated with better self-care and disease control. Notably, many family members who are involved in supporting patients' day-to-day self-care live apart from patients [8] and may play a role in preparing for visits, even when they cannot attend appointments.

In the present study, we linked survey and electronic medical record data from a large sample of patients in the Veterans Health Administration (VA) healthcare system who were at high risk of diabetes complications to: 1) determine the prevalence of family involvement in preparing for and participating in primary care visits, and the characteristics of patients reporting such family involvement; and 2) examine whether specific types of family involvement in medical visits were associated with better management of clinical risk factors for diabetes complications

(glycaemic control, blood pressure control and medication adherence). We based these analyses on a theoretical model (Fig. 1) in which family involvement in medical care increases activation among patients with diabetes [4,9,10], leading to improved self-management and more appropriate and timely clinical actions, and, ultimately, improved glycaemic and blood pressure control [11,12].

Methods

Sample recruitment

Survey respondents were recruited from a registry of high-risk patients with diabetes who received care in one VA healthcare system. All patients had: 1) poor glycaemic control (last HbA_{1c} > 75 mmol/mol (9.0%) or > 64 mmol/mol (8.0%) among patients aged < 55 years); 2) poor blood pressure control (last blood pressure value 160/100 mmHg or average >150/90 mmHg over the preceding 6 months); and/or 3) a previous diagnosis of lower extremity ulcer or amputation. In 2012, 1000 of the VA registry's 4517 patients were randomly selected and mailed a survey and a form requesting permission to access electronic medical record data. This was expected to yield a final sample of ~300 patients with and 300 patients without caregiver participation, given an estimated 40% combined survey non-response/refusals to sign a data release form. The expected 600 patients would give 86% power to detect a 5% between-group difference in medication adherence, calculated as percentage of 'gap days' (defined below), assuming a 20% standard deviation. Analytical cohorts for other outcomes were expected to be smaller as they were to be assessed only among participants not in adequate control of the particular outcome. Of 1000 survey requests, 36 patients were ineligible, 16 were deceased and 588 returned surveys (62% of those eligible), with 478 signing a data release form. Research procedures were approved by the VA Ann Arbor institutional review board.

Measures

Family supporter involvement

Respondents were asked, 'Thinking about all your friends and family members who seem concerned about your health, who is the person that gets most involved in your healthcare (your 'main health supporter')?' (spouse/partner, son/daughter, brother/sister, parent, other family member or friend, or 'No one gets involved in my healthcare').

Respondents with a main health supporter were asked how often in the past year their supporter 'suggested things for you to ask or tell your doctor' before medical appointments and 'came into the examination room with you for your medical appointment'. Respondents indicating that this happened 'at some appointments' or more frequently were categorized as having pre-visit or in-room involvement, respectively.

Patient demographic and health variables

The following registry data were collected: patient age; patient sex; and distance from patient's home to VA primary care source. Survey data collected were as follows: education level; race/ethnicity; and distance between the homes of patients and their health supporters.

Comorbidity burden was assessed using the Charlson comorbidity index [13], based on electronic medical record diagnosis codes, with scores categorized into 0, 1 and $\geq$ 2, after removing 'diabetes without complications'. Diabetes medication use was based on outpatient medication-fill data over the year preceding the survey date.

Depressive symptoms were assessed using the two item Patient Health Questionnaire (PHQ-2; score range 0–6,with scores ≥3 indicating a positive screen for depression) [14]. The Diabetes Management Self-Efficacy scale (five items; 1=not at all confident to 10=extremely confident) [15] and Diabetes Distress scale [16] ('Feeling overwhelmed by the demands of living with diabetes' and 'Feeling that I am often failing my diabetes regimen'; 1=not a problem to 6=a very serious problem; ≥3=high distress) were also used. Low health literacy ('Somewhat' to 'not at all confident' in 'filling out medical forms by yourself') was also assessed [17].

Trends in medication adherence and clinical risk factor control were examined using electronic medical record data from a specified time period centred on the date when the patient was sent the survey. Medication adherence was calculated as percentage of gap days or 'should have' days in prescriptions for diabetes, hypertension and hyperlipidaemia medications. Gap days were days when patients should have been taking a prescribed medication but did not have medication available based on fill data [18,19]. 'Should have' days are counted from the first fill date until

discontinuation. Medications were assumed to be discontinued when they were not filled for ≥ 180 days. We calculated the difference in percentage of gap days between the 12-month periods preceding and following the survey date, with a 90-day interval between so that medication fills were not included in both periods.

To assess glycaemic control, we calculated the difference between mean HbA_{1c} in the 6-month periods preceding and following the survey date.

Blood pressure was assessed by calculating the difference between average systolic blood pressure (SBP) in the 6 months before and after the survey date. If multiple readings were available from one day, we used the lowest reading. Emergency department or inpatient hospital readings were excluded.

Statistical analysis

We examined the proportion of patients with specific types of supporter involvement using the following mutually exclusive categories: 1) no health supporter; 2) health supporter who helps with day-to-day management but is not regularly involved in medical visits; 3) health supporter who is regularly involved with visit preparation by discussing visit agendas but does not regularly come to appointments and may or may not help with daily management; and (4) health supporter who regularly accompanies patients to visits (with or without visit preparation or daily management help). We examined differences across categories in patients' sociodemographic and health-related characteristics using chi-squared tests and one-way ANOVA. Where these tests yielded a statistically significant result, *post hoc* comparisons were performed among all possible combinations of health supporter groups, adjusting for multiple comparisons.

Multiple linear regression models were used to assess the relationship between health supporter roles and trends in patients' risk factors for diabetes complications, with separate models for each dependent variable. We first modelled the association between having (vs not having) a health supporter and each clinical variable. Next, among those with a health supporter, we modelled the association between type of supporter involvement (none, pre-visit only, visit accompaniment) and each clinical variable.

To model trends over a time period concurrent to survey administration, dependent variables were represented as differences between two time periods (6 or 12 months, as indicated above) before and after the survey date, assuming ongoing supporter roles during that time period. As shown in Fig. 2, the main models for SBP and HbA_{1c} excluded respondents with adequate control of these risk factors (SBP <150 mmHg and $HbA_{1c} \leq 64$ mmol/mol (8.0%); *n*=242 and 146 excluded cases, respectively) in the 6 months preceding the survey. Models also excluded respondents for whom no SBP (*n*=93), HbA_{1c} (*n*=172) or medication adherence (*n*=117) data were available during the pre- and/or post-survey periods. No significant ($P<0.05$) differences were found in the proportion of missing SBP or HbA_{1c} data by presence of health supporter or type of involvement (results not shown). All models adjusted for the baseline value of the clinical outcome, age, sex, education, race/ethnicity, comorbidity burden and diabetes medication use (none, oral, or insulin with or without oral medications). We also analyzed two sets of alternative models: 1) multilevel models to examine slopes over time in our dependent variables with all available repeated measures, and 2) models that included all respondents regardless of risk factor level at outset. In both cases results were similar to those presented here and are not reported.

Results

Survey respondents had a mean age of 67 years, 97% were male and 79% were non-Hispanic white (Table 1). Most respondents (78%) indicated that they had a main health supporter; 68% of whom were spouse/partners. Among respondents with a health supporter, 69% indicated that their supporter regularly helped them prepare for visits and 45% were regularly accompanied by this person to medical visits. Forty percent of patients receiving help preparing for visits were not regularly accompanied to medical visits by their supporter. Among accompanied patients, 91% also reported regular help with visit preparation.

Patients' characteristics varied according to their category of supporter involvement (Table 1): no health supporter; helps with home management only; helps prepare for visits only; and comes into the examination room ('accompanied'). Accompanied respondents had a mean age of 70 years, which was significantly older than the mean age of the other three groups (range 65–67

years). Compared with the 'visit preparation only' group, a greater proportion of accompanied patients had an education level lower than high school education (18 vs 9%), and low health literacy (43 vs 27%). More accompanied patients had comorbidity scores in the highest category (54%) compared with the 'no health supporter' (32%) and the 'home management only' (37%) groups. Those with no health supporter were more likely to live alone (45%) than other groups (range 13–24%). In both the 'visit preparation only' and 'accompaniment' groups, approximately three-quarters of respondents indicated that their health supporter was their spouse/partner, compared with half of the 'home management only' group.

No statistically significant differences across types of supporter involvement were found in patients' medication adherence, HbA_{1c} level or SBP, either before or after the survey date (results available in Table S1). In the analytical sample, mean medication adherence (i.e. % gap days) was 32%, both before and after the index date. Mean SBP was 151 mmHg in the 6 months before the index date and 143 mmHg in the 6 months after, and mean HbA_{1c} changed from 81 mmol/mol (9.6%) before the survey date to 72 mmol/mol (8.7%) after.

In multiple regression models adjusting for patients' sociodemographic and health characteristics, no significant associations were observed between the presence of a health supporter and concurrent trends in risk factors for diabetes complications (Table 2). Similarly, no significant differences in clinical risk factor trends were observed across groups as defined by supporter role (visit preparation, in-room, or home management only; Table 3).

Discussion

The majority of individuals in this large sample of male patients in the VA healthcare system with high-risk diabetes reported having a family member who regularly helps them prepare for medical visits, and many of these supporters also regularly attend appointments; however, we did not find evidence that having a supporter or receiving a specific type of medical visit support was associated with concurrent trends in medication adherence, glycaemic control or blood pressure control, among those with poor control before the survey date.

Nearly 70% of patients with a supporter regularly received input from this person before going to medical appointments regarding things to discuss with the doctor. To our knowledge, no previous study has quantified family help with medical visit preparation. Compared with those reporting help with preparation only, respondents who were older, less educated, and with lower health literacy were more likely to also report that their supporter regularly accompanied them to visits, similar to factors found to predict the presence of a visit companion in other studies [3,4,20]. Respondents with either visit preparation help or accompaniment had greater comorbidity burden than those without any medical visit involvement, possibly representing a response by family members to increased patient clinical need. The high prevalence of support with visit preparation in our sample suggests that there is a large, 'ready-made' group of supporters who could be the focus of interventions designed to optimize family contributions to visit planning and preparation. Such efforts would align with current interest in developing interventions to support patient preparation for medical visits [6,7,21] and to enhance family support during these visits [22].

Our multivariate analyses did not show a significant association between type of visit support and electronic medical record data on clinical risk factors. This could reflect either limitations of our data, or a true lack of association. Both glycaemic control and blood pressure are distal outcomes of family support for care. Proximal factors that may be affected more quickly by family support could include increased engagement and activation, or self-monitoring of blood glucose and healthy lifestyle changes (Fig.1); however, we failed to find an association with our administratively derived measure of medication adherence. Additionally, the survey item capturing involvement in visit preparation was intentionally broad, and those in this category could have a range of intensity and types of help, some of which may have more impact on clinical factors than others. Supporter categories may not have been sufficiently distinct from one another; for example, almost all accompanied patients also received pre-visit support.

We note that in spite of a wide confidence interval that did not allow us to reject the null hypothesis (Table 3), increasing intensity of medical visit support was positively associated with blood pressure control. A *post hoc* power calculation suggested that the wide interval could be attributable to type II error. Based on the actual sample size in this model, we only had 59%

power to detect a difference of 8 mmHg between the 21 patients with a health supporter but no medical visit involvement vs the 84 participants who were accompanied to visits or received visit preparation help only. The statistical models comparing patients with and without health supporters (Table 2) were also underpowered, with actual power ranging from 27 to 55%.

Family members attempting to help patients may use a mix of techniques that could have both positive and unintended negative effects. Family interactions related to chronic illness management sometimes engender negative feelings and can impede self-care [23,24]. Companions may add complexity and conflict to medical encounters [3,9] and could erode the patient autonomy that is associated with better self-care behaviours [25], although at least one previous study found little evidence that autonomy-detracting behaviours of visit companions led to decreased patient involvement in decision-making [26].

Supporters may need training and resources to effectively assist patients in these roles and to maximize their positive impact. Indeed, given barriers to scaling professionally provided pre-visit coaching interventions, the potential of family members to take on this role is important [4]. Interventions designed to elicit structured visit preparation support from family members may increase medical visit impact for a wider pool of patients than those who are accompanied to appointments, as many health supporters live apart from the patient and have competing demands, such as their own health problems, jobs or family care [8]. Interventions to enhance visit preparation support could include training family members to help patients formulate and prioritize questions, use decision aids and organize information to bring to the appointment. In addition, family members can be prompted to ask their own questions during visits and add information about their care roles at home. Wolff *et al.* [22] recently showed the feasibility of using a brief waiting room checklist tool with patient–companion pairs to align medical visit goals. Interventions for supporters outside of the patient's home may draw on models that use automated phone calls and emails to provide supporters with patient status updates and give suggestions for enhancing self-care support; these are associated with positive patient outcomes [27].

Several limitations of the present study should be considered. Our data are observational; the level of supporter involvement was not randomly assigned and patients' characteristics vary by level of supporter involvement. While this selection process may benefit patients who need assistance the most, our study design does not permit causal inference from health support to clinical outcomes. Future trials that test interventions to enhance the role of existing family health supporters with long-term follow-up are better suited for determining a causal effect of medical visit support. The ability to generalize the results of this study is limited by the fact that this sample of patients in the VA healthcare system was nearly all male, and largely non-Hispanic white. *Post hoc* power analysis revealed that our multivariable models were underpowered to detect clinically significant associations. Nonetheless a trend in the expected direction was only observed in one instance: greater decreases in blood pressure with increasing support intensity. We hope that the estimates of the prevalence of family support roles in this study will help inform planning for future studies examining associations between family support and patient clinical outcomes. Patient gender may influence the availability of support and its effects; for example, although men are more likely to have a spouse caregiver [28], women are more likely to be accompanied to visits [29], and may experience a greater impact of support on health and health behaviours [30] Last, patients who agreed to participate in this study may be healthier with more family support than those who declined participation.

In conclusion, in the present sample of mostly male patients in the VA system, family health supporters represent a prevalent resource for diabetes care. Many supporters already help their family members prepare for medical visits, whether or not they also accompany patients to these visits. While previous studies have shown that support during medical visits results in better patient–provider communication and visit satisfaction, the present study suggests that supporters may need additional training and assistance to have a measurable impact on patients' disease trajectory.

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Competing interests

None declared.

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Supporting information

Additional Supporting Information may be found in the online version of this article:

Table S1. Mean values of clinical risk factors before and after survey date, by health supporter role.

Table 1 Characteristics of respondents with high-risk diabetes, stratified by health supporter role

		No HS involved with medical visits		HS involved with medical visits		
Characteristic	**Overall sample**	**No HS**	**HS involved with home management only**	**HS helps prepare for visits only**	**HS comes into examination room**	***P****
	N=588	***n* = 131 (22%)**[†]	***n* = 123 (21%)**	***n* = 127 (22%)**	***n* = 207**[‡] **(35%)**	
Mean (SD) age, years *N* = **588**	67 (10)	66 (10)	66(10)	65 (9)	70 (10)	<0.001
Male, *n* (%) *N* = 588	569 (97)	126(96)	119 (97)	119 (94)	205 (99)	0.06
Education level, *n* (%) *N* = 571						0.01
< High school	73 (13)	13 (10)	13 (11)	11 (9)	36 (18)	
High school degree	209 (37)	54 (43)	36 (30)	39 (32)	80 (39)	
> High School	289 (51)	58 (46)	71 (59)	73 (59)	87 (43)	
White non-Hispanic, *n* (%) *N* = 588	467 (79)	97 (74)	102 (83)	101 (80)	167 (81)	0.33
Mean (SD) distance from VA facility, miles *N* = 477	39.8 (54.8)	39.9(31.3)	47.3 (107.1)	36.9 (27.8)	37.0(25.1)	0.46
Patient lives alone, *n* (%) *N* = 571	130 (23)	57 (45)	29 (24)	18 (15)	26 (13)	<.0001

Charlson comorbidity index score, *n* (%) ***N***=474						
0	178 (38)	54 (49)	50 (51)	31 (33)	43 (25)	0.0002
1	92 (19)	22 (20)	12 (12)	23 (24)	35 (21)	
2+	204 (43)	35 (32)	37 (37)	41 (43)	91 (54)	
Diabetes medications, *n* (%) *N* = 478						0.54
None	55 (12)	17 (15)	11 (11)	9 (9)	18 (10)	
Oral only	166 (35)	34 (31)	39 (39)	38 (40)	55 (32)	
Insulin +/- oral	257 (54)	60 (54)	50 (50)	48 (51)	99 (58)	
Low health literacy *n* (%) *N* = 588	202 (34)	44 (34)	36 (29)	34 (27)	88 (43)	0.01
Positive depression screen (PHQ-2) *n* (%) *N* = 588	152 (26)	37(28)	25 (20)	42 (33)	48 (23)	0.09
Mean (SD) Diabetes Self-Efficacy score (range 1–10) *N* = 539	8.03 (1.85)	7.9 (1.9)	8.2 (1.7)	7.8 (1.8)	8.1 (1.9)	0.28
High Diabetes Distress, *n* (%) *N* = 588	171 (29)	35 (27)	33 (27)	46 (36)	57 (28)	0.26
HS worked in past 6 months, *n* (%) *N* = 430	132 (31)	NA	40 (37)	42 (34)	50 (25)	.063
Distance patient lives from HS *N* = 453						
Live with	262 (57.8)		51 (42.5)	79 (62.7)	132 (63.8)	0.009

<20 miles	98 (21.6)		34 (28.3)	25 (19.8)	39 (18.8)	
21–100 miles	76 (16.8)		27 (22.5)	18 (14.3)	31 (15.0)	
<100 miles	17 (3.7)		8 (6.7)	4 (3.2)	5 (2.4)	
Relationship to patient, *n* (%) *N* = 457		NA				0.0001
Spouse	311 (68)		62 (50)	92 (72)	157 (76)	
Adult child	68 (15)		28 (23%	14 (11)	26 (13)	
Sibling	27 (6)		15 (12)	5 (4)	7 (3)	
Other Family	25 (6)		9 (7)	6 (5)	10 (5)	
Friend	26 (6)		9 (7)	10 (8)	7 (3)	

HS, health supporter; PHQ-2, two-item Patient Health Questionnaire.

*Continuous variables were compared using one-way ANOVA; categorical variables were compared using chi-squared tests.

†Subsample providing administrative and clinical data access in each category: no HS (*n*=111, 23%); HS helps with home management only (*n*=100, 21%); HS helps prepare for visits only (*n*=95, 20%); and HS comes into examination room (*n*=172, 36%).

‡HS comes into examination room: supporter comes into patient's appointments regularly, and may or may not be involved in other ways. Only 18 out of these 207 supporters said that they did not help with pre-visit preparation.

Table 2 Multiple regression analysis of association between presence of health supporter and concurrent trends in clinical outcomes

	Adjusted coefficient (95% CI)		
	SBP* **(*n*=139)**	HbA_{1c}† **(*n*=156)**	**Medication gap days‡ (*n*=350)**
Patients with no supporter (reference group)	1 (reference)	1 (reference)	1 (reference)
Patients who have a health supporter (any type)	3.93 (-1.91, +9.77)§	0.22 (-0.26, +0.70)¶	3.07 (-1.34, +7.48**

SBP, systolic blood pressure.

All models adjusted for age, sex, education, race/ethnicity, comorbidity index, diabetes medications and pre-survey value of outcome.

[†]Difference in mean SBP: mean SBP over 6 months post-survey minus mean SBP over 6 months pre-survey. Model limited to those participants who had a SBP >150 mmHg in the 6 months before the survey.

[†] Difference in mean HbA_{1c}: mean HbA_{1c} over 6 months post-survey minus mean HbA_{1c} over 6 months pre-survey. Model limited to those participants who had an HbA_{1c} reading > 64 mmol/mol (8.0%) in the 6 months before the survey.

[‡]Difference in percent total medication'gap days' from 1 year pre- to 1 year post-survey.

[§]Unadjusted coefficient and 95% CI 2.75 (-3.02, 8.52).

[¶]Unadjusted coefficient and 95% CI 0.10 (-0.37, 0.58).

[**]Unadjusted coefficient and 95% CI 2.98 (-1.37, 7.32).

Table 3 Multiple regression analysis of association between health supporter role group and concurrent trends in clinical outcomes in patients with health supporters

	Adjusted coefficient (95% CI)		
Health supporter role	**SBP[*,§] (*n*=105)**	HbA_{1c}[†¶] **(*n*=127)**	**Medication gap days[‡,**] (*n*=269)**
No medical visit involvement (reference group)	1 (reference)	1 (reference)	1 (reference)
HS helps prepare for visits only	-7.23 (-16.60, +2.14)[§]	0.13 (-0.41, +0.67)	3.75 (-1.83, +9.34)
HS comes into examination room	-8.04 (-16.78, +0.71)	-0.02 (-0.50, +0.46)	-1.77 (-6.91, +3.36)

SBP, systolic blood pressure.

All models adjusted for age, sex, education, race/ethnicity, comorbidity, diabetes medications and pre-survey value of outcome.

*Difference in mean SBP: mean SBP over 6 months post-survey minus mean SBP over 6 months pre-survey. Model limited to those participants who had a SBP >150 mmHg in the 6 months before the survey.

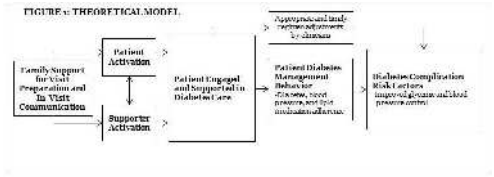
†Difference in mean HbA_{1c}: mean HbA_{1c} over 6 months post-survey minus mean HbA_{1c} over 6 months pre-survey. Model limited to those participants who had an HbA_{1c} reading > 64 mmol/mol (8.0%) in the 6 months before the survey.

‡Difference in percent total medication 'gap days' from 1 year pre- to 1 year post-survey.

§SBP unadjusted coefficients and 95% CI for visit preparation and in-room groups, respectively: -6.07 (-14.97,2.84) , -5.62 (-13.79,2.55).

¶HbA_{1c} unadjusted coefficients and 95% CI for visit preparation and in-room groups, respectively: 0.06 (-0.51,0.63), -0.10 (-0.59,0.39).

**Medication gap days unadjusted coefficients and 95% CI for visit preparation and in-room groups, respectively: 3.10 (-2.51, 8.72), -2.81 (-7.75, 2.13).



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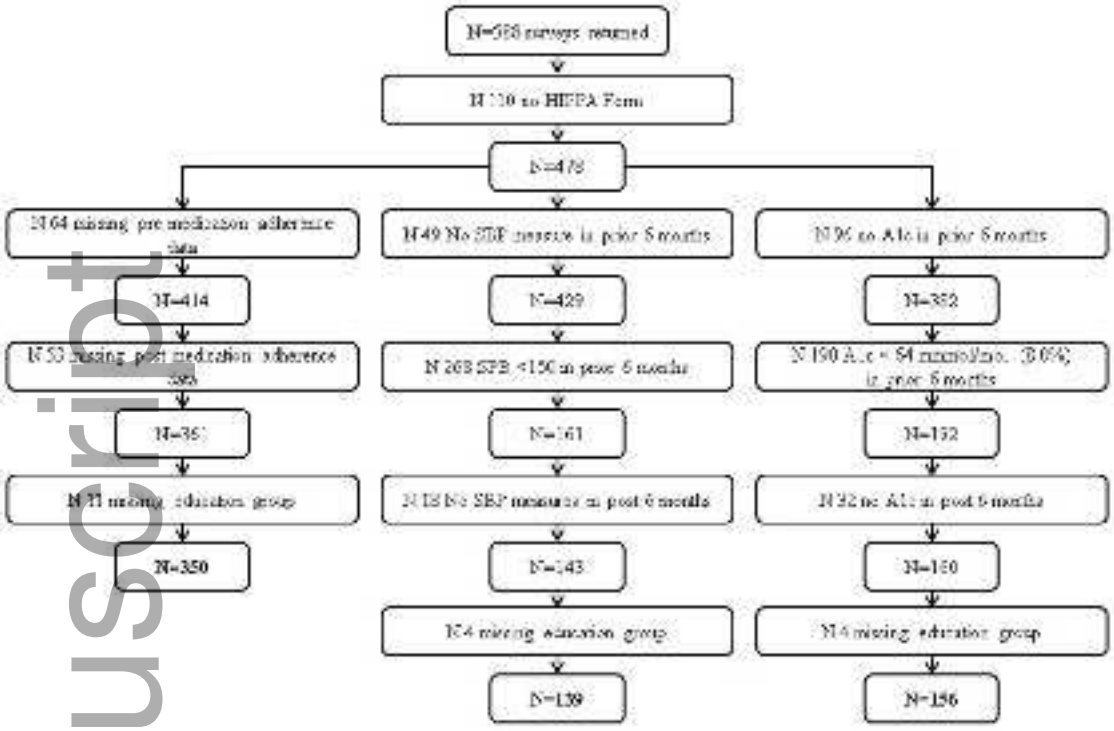

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