

Factors related to missing and rescheduling pharmaceutical care appointments by aged outpatients in a Brazilian public health setting

Factores relacionados con la pérdida y reprogramación de citas de atención farmacéutica por los pacientes ambulatorio mayores en un servicio brasileño de salud pública

Thiago Vinícius Nadaleta Didone¹; Maristela Ferreira Catão Carvalho²; Graziela Luppi²; Daniela Oliveira de Melo³; Eliane Ribeiro⁴

1. Pharmacy Department. UBS Ponte Rasa - Basic Health Unit. São Paulo, Brazil.

2. Pharmacy Department. Paulista Institute of Geriatrics and Gerontology. São Paulo, Brazil.

3. Department of Biological Sciences of the Institute of Environmental, Chemical and Pharmaceutical Sciences. Federal University of São Paulo. São Paulo, Brazil.

4. Department of Pharmacy of the Faculty of Pharmaceutical Sciences. University of São Paulo. São Paulo, Brazil.

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Correspondencia Correspondence

Thiago Vinícius Nadaleta Didone
Laboratory of Pharmaceutotechnical
Research, Room 2c, Faculty of
Pharmaceutical Sciences of University of
São Paulo, 580 Av. Prof. Lineu Prestes
Ave., Butantã, São Paulo, SP, Brazil,
05508-000
tididone@gmail.com

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RESUMEN

Objetivos. Descubrir razones por las que los pacientes perdieron la cita en atención farmacéutica (AF), identificar los factores predictivos de perder al menos una cita y reprogramar después de una ausencia, y comparar el comportamiento de reprogramación de los pacientes recibiendo diferentes tipos de AF.

Métodos. Se incluyeron todos los pacientes mayores que tenían al menos una cita programada en el servicio de AF de un establecimiento de salud de la ciudad de São Paulo, Brasil, de enero a diciembre/2011. Análisis chi-cuadrado comparó datos categóricos entre los grupos; modelos de regresión logística multivariante predijeron el comportamiento de presencia y de reprogramación.

Resultados. Se identificaron 421 pacientes, siendo 221 (52,5%) ausentes. El olvido fue el motivo relacionado con el paciente más frecuente (56,3%). El analfabetismo fue un factor de riesgo para ser un ausente [OR (IC95%)=2,27(1,17:4,40), p=0,015]. Los pacientes que tenían conocimiento previo del farmacéutico presentaron más chance de reprogramar una cita después de la primera ausencia en comparación con los que no tenía [OR (IC95%)=3,57(1,90:6,71), p<0,001]. Además, ausentes que tenían conocimiento del farmacéutico y recibieron seguimiento farmacoterapéutico reprogramaron más de los que reciben otros tipos de PC (p=0,035).

Conclusión. El analfabetismo predijo ausencia en pacientes ambulatorios mayores bajo PC y el olvido fue la principal razón para eso. El conocimiento previo del farmacéutico y la provisión del seguimiento farmacoterapéutico explicaron el comportamiento de reprogramación, lo que indica que el establecimiento de una relación con el farmacéutico centrada en el paciente juega un papel fundamental en la continuidad de la AF.

Palabras clave: Servicios de Salud para Ancianos, Citas y Horarios, Servicios Farmacéuticos, Relaciones Profesional-Paciente.

ABSTRACT

Objectives. To uncover reasons why patients missed pharmaceutical care (PC) appointments, identify predictive factors to miss at least one appointment and to reschedule after a miss, and compare the rescheduling behavior of patients receiving different types of PC.

Methods. All elderly patients who had at least one scheduled appointment in the PC service of a health setting of São Paulo city, Brazil, from January to December/2011 were included. Chi-square analysis compared categorical data between groups; multivariate logistic regression models predicted attendance and rescheduling behavior.

Results. We identified 421 patients, being 221 (52.5%) non-attenders. Forgetting the appointment was the most common patient-related reason (56.3%). Illiteracy was a risk factor to be a non-attender [OR(95%CI)=2.27(1.17:4.40), p=0.015]. Patients having previous knowledge of the pharmacist pre-

sented more chance to rescheduled an appointment after the first miss compared to those who had not [OR(95%CI)=3.57(1.90:6.71), $p < 0.001$]. Further, non-attenders who had knowledge of the pharmacist and received Medication Review with Follow-up rescheduled more than the ones receiving other types of PC ($p = 0.035$).

Conclusion. Illiteracy predicted non-attendance in PC to aged outpatients and forgetfulness was the main reason for that. The previous acquaintance of the pharmacist and the provision of pharmacotherapeutic follow-up explained the rescheduling behavior, which indicates the establishment of a patient-centered patient-pharmacist relationship plays a pivotal role in the continuity of the PC.

Keywords: Health Services for the Aged, Appointments and Schedules, Pharmaceutical Services, Professional-Patient Relations.

INTRODUCTION

Missed appointments are an important problem for administrators, staff and patients¹. Non-attendance aftermath comprise misused staff time, equipment and ward capacity, and patients spending longer time in waiting rooms and waiting longer for health services. The latter may worsen clinical outcomes², especially in patients with chronic diseases who generally need long-term ambulatory care³.

McLeod *et al.* (2005) showed that non-attenders with coronary artery disease receiving care at a cardiac outpatient clinic had higher mean total cholesterol levels and fewer of them achieved target lipid profile when compared to attenders⁴. In addition, non-attenders seem to have lower perceptions of symptoms and controllability and, or curability of their illness⁵.

There is a wide range of determinants of missing appointments^{3,6,7}, which can be separated between patient- or health system-related factors. The proper identification of these factors helps administrators to develop effective strategies to reduce non-attendance, which might have a greater impact in elderly populations. That is because older patients usually need long-term care and represent the fastest growing population. It is estimated that by 2050 there will be 400 million people aged 60 or over, 4 out of 5 of them living in low- and middle-income countries⁸.

Medication Review with Follow-up (MRF) is a modality of pharmaceutical care (PC) by which the pharmacist can assess patient's drug-related needs, identify, solve and prevent drug related problems, develop a rational care plan and conduct follow-up evaluations to ensure effectiveness and safety of drug therapy^{9,10}. Since the achievement of this goal relies on patient's cooperation, the coordination of the pharmacist with other health care providers⁹, and regular

patient evaluation through repetitive appointments, one or more patient misses may compromise successful outcomes and waste pharmacist's work and health resources. The Dáder Method is a tool to perform MRF with any patient by a documented, systematic, and continuous manner¹⁰.

Here we assessed reasons why patients missed their last appointment in a PC service, and identified predictive factors to miss at least one appointment and to reschedule after a miss. We also compared the rescheduling behavior of patients receiving different types of PC.

METHODS

This study was carried out in the Department of Pharmaceutical Care of the Paulista Institute of Geriatrics and Gerontology (PIGG). This is a public health setting which belongs to the Brazilian Unified Health System (Sistema Único de Saúde - SUS) and is run by the Department of Health of the State of São Paulo. It is located at east zone of São Paulo city, Brazil, and offers primary and specialized multidisciplinary care for aged patients (60 years and over). Near 16,800 appointments are performed every month.

The PC service was created in 2001. It assists patients mostly presenting hypertension, dyslipidemias, and/or type 2 diabetes mellitus who spontaneously seek care or are referred by PIGG physicians. Three clinical pharmacists are in charge of PC service, which has about 100 scheduled appointments every month and a waiting list of 2 weeks. The average time between appointments is about 1 month. Clinical pharmacists perform 3 types of PC: MRF by means of the Dáder Method, recipe loss follow-up, and health education follow-up. In the last 2 types the goal is, respectively, to refill lost prescriptions monthly until the prescribing doctor make a new one and to educate patients on medication knowledge.

This work was divided into 2 phases and was performed from January/2011 to December/2011. Subjects for study phase 1 included all elderly patients who had at least one scheduled appointment in PC service. Phase 2 included phase 1 patients who missed at least one scheduled appointment.

During phase 1, data were collected from the PIGG patient database and included sociodemographics, available health service, and attendance behaviour. The first comprised age, gender, self-reported skin color, literacy status, and family arrangement. The second represented the type of health care to which the patient had access at PIGG. The third classified patients between non-attenders (who missed at least one scheduled PC appointment in the period) and attenders (who did not miss any). Still, we assembled the

number of scheduled appointments, and number and type of missed appointments. The latter included initial (first patient visit) and return type (subsequent patient visits). We calculated the non-attendance rate (NAR) by dividing the number of missed appointments by the number of scheduled appointments in the period.

In study phase 2 we collected supplementary data: number of prescribed drugs, previous knowledge of the pharmacist, rescheduling behaviour, and type of PC. The first was accounted for the last medical prescription made by all medical specialties the patient attended in the period. The second corresponded to whether the patient was already attending PC service before the first miss of the period. The third divided non-attenders into two groups according to whether they rescheduled a PC appointment after the first miss. The fourth variable split patients into two groups (receiving MRF or receiving other types of PC) and was available only for non-attenders who had previous acquaintance of the pharmacist before the first miss.

Also in phase 2, non-attenders were telephone interviewed by trained staff. Interviewers asked patients the question: *For what reason did you miss the last scheduled pharmaceutical care appointment?* The following patients were excluded from the study: patients whose telephone number were missing, not reached by interviewers after 5 calls in five different days and time of the day, with hearing loss, who had died, and who did not sign a Free and Informed Consent Term.

Data analyses were performed using IBM SPSS version 20 (IBM Corporation, Armonk, NY, USA). Descriptive statistics were presented as mean values and standard deviation (SD), or as absolute and relative frequencies depending on variable nature. Bivariate Pearson chi-square analysis compared categorical data between groups. Odds Ratios (OR) and 95% Confidence Intervals (CI) were calculated by logistic regression models. Univariate logistic regression analysis identified interactions between dependent and independent variables. Those with p-values < 0,200 were included by backward method based on likelihood ratio statistic in a multivariate analysis. P-values < 0,050 were considered statistically significant.

The study was approved by the Committee of Ethics in Human Research of the Institute of Health of the Department of Health of São Paulo State prior to its initiation.

RESULTS

Phase 1 revealed 421 patients who scheduled at least one appointment in PC service, being 221 (52.5%) non-attenders and 200 (47.5%) attenders. The mean age was 73.5(SD=6.8)

years (range 60-94). Regarding the available health service, 59.1% had access only to specialized care at PIGG, while the remaining had access to specialized and primary care. Prevalence of females (70.8%), patients self-identified as whites (52.7%), and literates (84.1%) were found in this sample. In regards to family arrangement, 47.2% of the patients were living with spouse (with or without other relatives and non-relatives), 37.9% without spouse and children (with at least another relative or non-relative), and 14.9% alone. Information about self-reported skin color, literacy and family arrangement was not available for, respectively, 44, 16 and 25 patients. Difference in frequencies between non-attenders and attenders was found only in literacy groups; in brief, the frequency of illiterates was higher in non-attenders compared to attenders ($\chi^2=9.32$, $p=0.002$).

All 421 PC patients scheduled 941 appointments of which 291 were missed. The median and mean number of overall scheduled appointments was, respectively, 1.0 and 2.2(SD=1.9) (range 1-13). NAR was 30.9%, being 17.2% accounted for initial misses and 13.7% for return misses.

Table 1 shows univariate logistic regression results for sociodemographics and available health service between non-attenders and attenders. Illiterates had increased risk to miss at least one appointment (OR=2.67 [95%CI 1.40:5.11], $p=0.003$) compared to literate patients.

We split non-attenders between the ones who did and did not reschedule after the first miss of the period. Difference of frequencies between categories was seen only in the variable that accounted the knowledge of the clinical pharmacist the patient had before the miss ($\chi^2=16.30$, $p<0.001$). The univariate logistic regression results for phase 2 patients are shown in table 2. A point of interest is that patients who had had previous acquaintance of the pharmacist presented greater risk of rescheduling than patients who had not known the pharmacist (OR=3.57 [95%CI 1.90:6.71], $p<0.001$).

We pushed the analysis even further and investigated the 73 patients who had previous acquaintance of the pharmacist before the first miss (figure 1); fifty-seven received MRF and 16 received other types of care. Results showed that the majority of patients on MRF rescheduled after a miss comparatively with patients receiving other types of PC ($\chi^2=4.44$, $p=0.035$).

Before the telephone interviews, 18 patients (8.1%) were excluded because their phone numbers were missing at PIGG database and 10 patients (4.5%) did not answer the phone after all attempts. Out of the 193 patients contacted over the phone, 2 (1.0%) had hearing loss and 9 (4.7%) had died. Of the remaining, five (2.7%) refused to participate and

sign the Free and Informed Consent Term. As a result, 177 patients were interviewed to assess their reasons to miss. Seventeen of them (9.6%) did not want to uncover their motives so they said answers such as «because other things». The remaining 160 patients gave 8 different reasons in total, being forgetfulness the most frequent one (44.4%). We divided the reasons into 2 groups (figure 2): patient-related (78.8%) and health system-related (21.2%). In the first group, «forgetting the appointment» (56.3%) was the most common reason, while in the second, «not informed about the appointment date» (82.3%) was the pivotal motive.

In the multivariate analysis, gender, self-reported skin color, and literacy were included as independent variables.

Due to missing data, the number of included cases was 371. As a result, literacy was the only variable that remained in the model (model $\chi^2=6.33$, $p=0.012$; Nagelkerke's $R^2=0.023$), presenting a OR of 2.27 (95%CI 1.17:4.40, $p=0.015$). In the same fashion, we selected self-reported skin color, number of prescribed drugs, and previous knowledge of the pharmacist as independent variables for multivariate logistic regression aiming to predict whether a non-attender rescheduled after the first miss. The only variable kept in the model was the knowledge of the pharmacist (model $\chi^2=16.43$, $p<0.001$; Nagelkerke's $R^2=0.119$). Results showed no change compared to the univariate model (OR=3.57 [95%CI 1.90:6.71], $p<0.001$).

Table 1. Univariate Logistic Regression Analysis Predicting whether a PC Patient Missed at Least One Scheduled Appointment

Characteristic	Non-attenders (N=221)	Attenders (N=200)	OR [95% CI]	P-value
Age (years) mean (SD)	74.1 (7.0)	73.9 (6.6)	1.01 [0.98:1.04]	0.468
Age group (years) (%)				
60 - 69	66 (29.9)	63 (31.5)	1.00	
70 - 79	113 (51.1)	102 (51.0)	1.06 [0.68:1.64]	0.802
> 80	42 (19.0)	35 (17.5)	1.15 [0.65:2.02]	0.638
Gender (%)				
Male	56 (25.3)	67 (33.5)	1.00	
Female	165 (74.7)	133 (66.5)	1.48 [0.97:2.26]	0.067
Self-reported skin color (%)				
White	114 (56.4)	108 (61.7)	1.00	
Intermediate	67 (33.2)	52 (29.7)	1.22 [0.78:1.91]	0.385
Black	20 (9.9)	11 (6.3)	1.72 [0.79:3.76]	0.173
Indian	1 (0.5)	4 (2.3)	0.24 [0.03:2.15]	0.201
Literacy (%)				
Literate	176 (82.6)	178 (92.7)	1.00	
Illiterate	37 (17.4)	14 (7.3)	2.67 [1.40:5.11]	0.003
Family arrangement (%)				
Living alone	31 (14.8)	28 (15.1)	1.00	
Living without the spouse and children ^a	79 (37.6)	71 (38.2)	1.01 [0.55:1.84]	0.987
Living with the spouse ^b	100 (47.6)	87 (46.7)	1.04 [0.58:1.87]	0.900
Available health service (%)				
Specialized care only	130 (58.8)	119 (59.5)	1.00	
Primary and specialized care	91 (41.2)	81 (40.5)	1.03 [0.70:1.52]	0.888

Data presented as mean (SD) for continuous variable, number (column percentage) for categorical variables. The following categories had missing data (the number of missing values are in brackets): Self-reported skin color (44), Literacy (16), Family arrangement (25).

^aIncludes at least another relative or non-relative; ^bIt can or cannot include other relatives and non-relatives.

CI = confidence interval; OR = odds ratio; PC = pharmaceutical care; SD = standard deviation.

Table 2. Univariate Logistic Regression Analysis Predicting whether a PC Non-attender Rescheduled After the First Miss

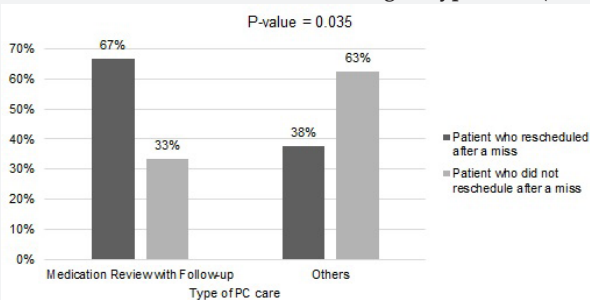
Characteristic	Patient who rescheduled after the first miss (N=75)	Patient who did not reschedule after the first miss (N=102)	OR [95% CI]	P-value
Age (years) mean (SD)	74.1 (7.0)	73.9 (6.6)	1.00 [0.96:1.05]	0.842
Age group (years) (%)				
60 - 69	23 (30.7)	25 (24.5)	1.00	
70 - 79	39 (52.0)	53 (52.0)	0.80 [0.40:1.61]	0.532
> 80	13 (17.3)	24 (23.5)	0.60 [0.24:1.42]	0.239
Gender (%)				
Male	15 (20.0)	25 (24.5)	1.00	
Female	60 (80.0)	77 (75.5)	1.30 [0.63:2.68]	0.479
Self-reported skin color (%)				
White	42 (60.9)	49 (51.0)	1.00	
Intermediate	19 (27.5)	40 (41.7)	1.17 [0.38:3.60]	0.788
Black	7 (10.1)	7 (7.3)	0.55 [0.28:1.10]	0.091
Indian	1 (1.4)	0	-	-
Literacy (%)				
Literate	60 (82.2)	81 (82.7)	1.00	
Illiterate	13 (17.8)	17 (17.3)	1.03 [0.47:2.29]	0.937
Family arrangement (%)				
Living alone	14 (19.2)	12 (12.4)	1.00	
Living without the spouse and children ^a	25 (34.2)	36 (37.1)	0.60 [0.24:1.50]	0.271
Living with the spouse ^b	34 (46.6)	49 (50.5)	0.60 [0.25:1.44]	0.251
Available health service (%)				
Specialized care only	47 (62.7)	56 (54.9)	1.00	
Primary and specialized care	28 (37.3)	46 (45.1)	0.73 [0.39:1.33]	0.301
Prescribed drugs, mean (SD)	7.8 (SD=3.6)	6.8 (SD=3.3)	1.01 [0.98:1.04]	0.089
Prescribed drugs (%)				
0 - 4	11 (14.7)	22 (21.6)	1.00	
5 - 8	37 (49.3)	53 (52.0)	1.40 [0.61:3.22]	0.434
> 9	27 (36.0)	27 (20.5)	2.00 [0.81:4.91]	0.131
Previous knowledge of the pharmacist (%)				
No previous acquaintance of the pharmacist	31 (41.3)	73 (71.6)	1.00	
Previous acquaintance of the pharmacist	44 (58.7)	29 (28.4)	3.57 [1.90:6.71]	<0.001

Data presented as mean (SD) for continuous variable, number (column percentage) for categorical variables. The following categories had missing data (the number of missing values are in brackets): Self-reported skin color (12), Literacy (6), Family arrangement (7).

^aIncludes at least another relative or non-relative; ^bIt can or cannot include other relatives and non-relatives.

CI = confidence interval; OR = odds ratio; PC = pharmaceutical care; SD = standard deviation.

Figure 1. Comparison of Patients Who Did and Did Not Reschedule after the Last Miss According to Type of PC (N=73)

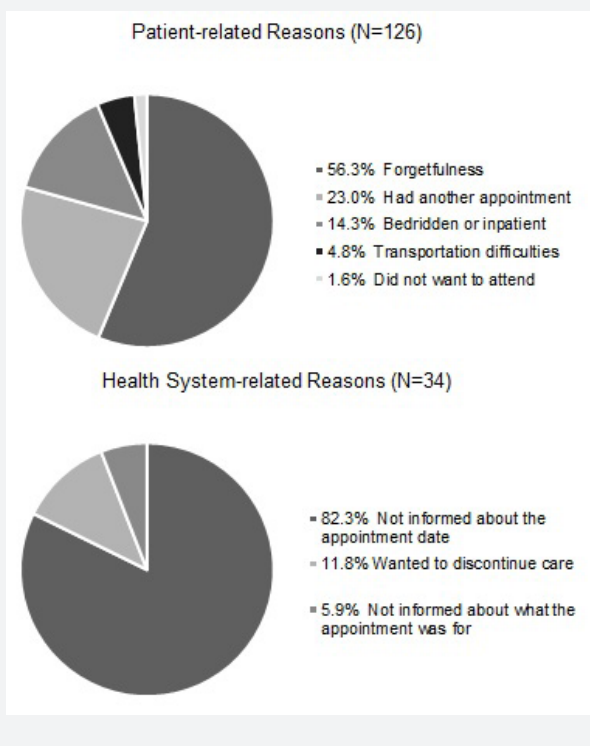


Data presented as percentage of the type of care. *Others* category includes *recipe loss follow-up* and *health education follow-up*.

P-value was calculated from chi-square test ($\chi^2=4.44$).

PC = pharmaceutical care

Figure 2. Reasons for Non-attendance in Pharmaceutical Care



DISCUSSION

To the best of our knowledge, this work was the first to assess the rate, causes, and related factors of elderly outpatient non-attendance in a PC service. NAR in PC was 30.9% and forgetfulness was the major reason patients gave to explain why they missed the last appointment. In addition, illiteracy and previous knowledge of the pharmacist were risk factors for, respectively, missing at least one appointment and rescheduling after the first miss of the period.

Still, we evidenced that more patients receiving MRF rescheduled after the first miss compared to patients receiving other types of PC.

Our NAR is higher than recent work. Non-attendance in general practice appointments in England showed rates of 6.5%¹¹ and 7.7%¹²; in Malaysia, general practice NAR was 16.7%¹³; and Murdock *et al.* (2002) found a NAR of 14.0% in a gastroenterology clinic in Ireland¹⁴. This was somehow expected since advanced age seems to predict non-attendance pattern¹⁵. Despite that, we found 30.9% a high figure that needs immediate intervention.

Brazilian work addressing the study of non-attendance is wanting and has been conducted so far mainly in surgery services. In João Pessoa city, Paraíba, Brazil, it was found NAR from 24.1% to 41.2% of scheduled general practice appointments in health settings managed by SUS¹⁶. That is another example why health administrators in Brazil should address the issue of non-attendance, especially in services managed by SUS, which has been experiencing a burden of healthcare attendance and costs.

Some reviews^{3,6,7} listed factors leading to missed healthcare appointments assessed by a variety of papers. Any of them found association between illiteracy and attendance behavior, likely due to the lack of illiterates attended by the settings where studies were performed. Here, illiteracy was the only significant risk factor to non-attendance. Once in Brazil illiteracy is positively correlated with age¹⁷, our results reasserted the importance of assessing non-attendance in the elderly.

In our work, patients who had acquaintance of the pharmacist prior to the miss had a greater chance to reschedule an appointment. That is likely due to the establishment of a relationship between pharmacist and patient during PC. Although there are studies that investigate the effect doctor-patient relationship has on attendance behavior, work on pharmacist-patient relationship is lacking. Patients in primary care expressed the lack of empathy and understanding from the general practitioner as an obstacle to attend appointments¹⁸. Doctors, in the same manner, felt that patients were less likely to attend if a relationship was not established yet¹⁸.

Further, the comparison we made between different types of PC indicated that patients receiving MRF were more prone to reschedule an appointment compared to other types of care. We are of the opinion this was due to the use of the Dáder Method to provide MRF because it engages pharmacist to develop attitudes to make patients feel that they are open and responsive to their healthcare needs, ultimately creating a patient-centered relationship. The Dáder

Method propose setting up a plan of interventions in order to enhance or preserve patient health status; when setting up the plan, the pharmacist must create a patient-centered communication environment of intimacy, confidentiality and consent, engage the patient to actively participate in setting priorities and making decisions, embrace patient concerns and expectations, and, as soon as the decisions were made, support the patient throughout the process¹⁰.

A study conducted with older adults in the United States showed that their perceptions of the patient-centeredness of the relationship with the pharmacist were positively correlated with their perceptions of their own participative behavior and with the frequency pharmacists communicated with them¹⁹. This endorses that the pharmacist attitudes recommended by the Dáder Method effectively establishes a patient-centered patient-pharmacist relationship.

Forgetfulness was the most frequent reason patients gave to have missed an appointment, ranging from 30.0 to 49.4%^{13,14,20}, what are in line with our results. Qualitative studies investigating health professionals and staff perceptions on causes of patient non-attendance also presented forgetfulness as the most important issue related to missed appointments^{1,18}. Forgetting was usually perceived by doctors to be a genuine, universal and justifiable one-off mistake¹ what is reasonable since patients even described reasons that let them more prone to forget appointments such as illnesses, change of job, and location on holidays¹⁴.

These findings support the use of reminders in health-care. They not only allow patients to confirm attendance or cancel an appointment, but also are effective in shortening NAR. A recent meta-analysis about mobile phone messaging reminders concluded this intervention was more effective than no reminder, and as effective as telephone call reminders, in decreasing NAR of healthcare appointments²¹. Reminders are conceptually very effective in aged individuals since they have in general a decrease in memory performance, especially in regard to learning new information²². Conversely, we feel this type of reminders would not be effective in our study setting for the reason that illiterates usually have lower incomes so they are less likely to own a telephone. Previous work showed that non-attenders generally do not have a telephone²³; as a result, they are more likely to fail in cancelling the appointment²³ and to benefit for newer and more complex appointment system⁷. The strategy of overbooking appointments to allow for anticipated non-attendance is pragmatic¹⁴ and we found to be the most cost-effective short-time intervention in our scenario, despite the pressure it may represent to both patient and staff⁷.

Some limitations should be pointed out. In the first place, the regression model did not account for diseases related to memory loss or cognitive decline, which may play a substantial role in the attendance behavior. Secondly, we feel some patients might have omitted the real reasons to miss appointments fearing to face treatment cessation, even though they were fully enlightened this would not happen no matter their answers. Finally, despite the fact that the PIGG population is very distinctive, we believe the employment of the Dáder Method, a validated and reliable tool, enhances external validity.

Finally, we believe our findings may contribute to the improvement of PC quality in other settings and encourage further research in this topic.

CONCLUSION

Illiteracy predicted non-attendance in PC to aged outpatients and forgetfulness was the main reason they gave to justify being absent in the last appointment. Besides, whether the patient rescheduled a PC appointment after a miss was explained by the acquaintance of the clinical pharmacist prior to it. On top of that, the provision of MRF by means of the Dáder Method, more than other types of PC, was positively related to the rescheduling behavior, indicating that the establishment of a patient-centered patient-pharmacist relationship plays a pivotal role in the continuity of the care.

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