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Chronic disease medication management at home. A quantitative survey among 180 patients.

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Table 1: Characteristics of the participating GPs

	Type	Age	Installation	Type of exercise	Area of exercise	Chronic disease Personally affected	Pillbox use
M1	F	49	2019	MDS	urban	no	
M2	F	39	2019	MDS	urban	no	
M3	M	43	2009	MDS	rural	**yes**	no
M4	M	35	2019	MDS	urban	no	
M5	F	32	2019	MDS	rural	no	
M6	M	60	1992	MDS	rural	no	
M7	M	49	2006	MDS	rural	no	
M8	F	47	2011	MDS	urban	no	
M9	F	38	2016	MDS	urban	no	
M10	F	37	2018	MDS	rural	no	
M11	M	61	1992	CDG	urban	**yes**	yes
M12	F	53	1998	MDS	rural	no	
M13	M	32	2020	CDG	rural	**yes**	no
M14	F	32	2021	MDS	urban	no	
M15	M	47	2005	CDG	urban	no	
M16	M	31	2020	CDG	urban	no	
M17	M	46	2007	CDG	urban	no	
M18	F	42	2012	CDG	urban	no	
M19	F	42	2010	MDS	rural	**yes**	no
M20	F	36	2021	CDG	rural	no	

MSD=Health Centre; CDG=Group Practice

Chronic disease medication management at home. A quantitative <u>survey</u> among 180 patients.

ABSTRACT

Background: In France, 40% of people aged over 16 (20 million) report having at least one chronic disease requiring long-term treatment. Compliance is estimated to be 50% on average.

Aim: To study the practical management of oral treatments at home by people living with one or more chronic diseases.

Design and setting: Thirty general practitioners in France were invited by e-mail to enrol ten consecutive patients with chronic diseases.

Method: A quantitative, descriptive, observational, cross-sectional study was carried out using standardised questionnaires to assess the socio-demographic profile of doctors and patients and the management of oral medication at home.

Results: Twenty general practitioners collected 180 questionnaires: 69.4% said they did not find taking their medication a problem; 42.8% used a pillbox; 79.4% said they knew 'all' their medications. 61% reported forgetting to take their medication.

Conclusion: More than half of patients are non-adherent. Personalised reminders could reduce unintentional medication non-adherence.

HOW THIS FITS IN

- Compliance among people with chronic diseases averages only 50% in general.
- We asked 180 chronically ill people how they manage their medication at home.
- 61% declared seldom or often to forgot to intake their medication.
- The frequency of omissions remains the same with or without a pillbox.

INTRODUCTION

Polypathologies are prevalent and can be challenging for GPs due to the increasing range of disorders diagnosed and treated as disease and a lower threshold of range and severity of symptoms required for diagnosis and treatment. At the same time, GPs face patients' changing perception of disease and expectations of treatment.

Furthermore, polypathologies are becoming more common as the population ages (1).
In 1960, 4.3% of the population in France was aged 75 or over, rising to 7.2% in 2000 and 9.6% in 2020. In 2019, 91% of people aged 75 and over have at least one chronic disease (CD) or treatment (2).
In 2019, 37% of people aged 75 and over had cardiovascular disease: 14% had coronary heart disease, 9% had heart failure, 7% had a stroke and 16% had a rhythm disorder. Men were

particularly affected (46% of people aged 75 and over for all cardio-neurovascular pathologies, compared with 31% of women of the same age) (3).

The incidence of respiratory diseases is also increasing (12% of people over 75) (4). Fifteen percent of women and 12% of men aged 16-19, almost half of those aged 55-59 and over 70% of women and men aged 75 and over report having a CD or health problem. (5).

People living with one or more CD are usually on long-term oral treatment to stabilise the course of their disease and maintain their quality of life.

Therapeutic compliance is defined as the congruence between patient behaviour (e.g. taking medication) and the prescribed treatment in the context of CD (6,7).

According to the WHO, compliance among patients with CD averages only 50% in developed countries (8).

GPs are at the forefront of supporting chronic patients, encouraging them to adhere to their treatment regimens daily, and preventing and identifying the risks associated with home medication management (MM) (9,10).

The main objective of this study was to find out about patients' habits in taking their long-term medication, including the practical arrangements for doing so (storage, preparation, reminders.

METHODS

Study design

We conducted a quantitative, descriptive, observational, cross-sectional study using standardised anonymized questionnaires to assess the socio-demographic profiles of physicians and patients and the patients' management of oral medication at home.

Study population

The inclusion criteria for general practitioners were to exercise in private practice in the Nord Pas-de-Calais region, and the exclusion criteria were to be a hospital doctor or a locum.

The inclusion criteria for patients were to be adult, to consent to participate in the study and to have one or more CD undergoing long-term treatment. People with one or more CD without long-term treatment and people who refused to participate in the study were excluded.

Recruitment

A convenience sampling was used, aiming to include 300 patients, considered to be representative for this French region. During a routine consultation in their practice, thirty GPs who were invited by e-mail, containing the questionnaires for both, GPs, and patients, to recruit 10 consecutive patients who met the inclusion criteria. After obtaining oral consent from the patients, the GP handed them the anonymised questionnaire to complete on their own or with the help of their GP. The questionnaire was also made available in the waiting room, so that patients could choose to complete it alone there before the consultation, or with the GP during the consultation, so that they could complete all or part of the questionnaire together.

Data collection

The questionnaires were distributed between 24 July 2023 and 03 October 2023, either handed to the GPs, left in their letterbox, sent to their secretary after acceptance by telephone contact or e-mail to print it. Before enrolling patients with chronic conditions, GPs also completed a questionnaire on their investigator profile. (gender, age, year of establishment, practice structure, urban or rural location, CD or not, use of pillbox). The questionnaires have been stored in a closed urn in the GPs office and have been collected by the second author.

Questionnaire

The questionnaire has been inspired by results from a prior qualitative study among 30 patients with Parkinson's disease and other CD.

The questionnaire has been prior validated by the university Data Protection Officer and been tested by ten patients. The questionnaire (supplementary material) consisted of five parts: 1)

the chronic disease(s); 2) the pharmacy; 3) preparation of medicines at home; 4) compliance; 5) sociodemographic data. The questionnaire consisted of 35 standardised closed questions, except for 15, 27 and 33 which were open-ended.

Data analysis

The data of this non-web-based survey have been transcribed in an Excel table.
The Chi-square test was used to test for dependence between variables. The significance level was set at 5% (p ≤ 0.05). The data were calculated using XLSTAT® in Excel®.

RESULTS

Characteristics of the GP population.

Twenty out of 30 invited GPs participated in the study and practiced in nine different areas of the Nord-Pas de Calais region in France.

Table 1 shows the socio-demographic characteristics of the GP population.

Characteristics of the chronically ill population

Table 2 shows the socio-demographic characteristics of patients.

Age distribution among the chronically ill population

Figure 1 shows the age ranges of the participating patients.

Medication management and adherence

Table 3 shows how daily treatments are managed at home and reasons for omissions.

For 70% of respondents, taking daily treatment was not a burden. Experiencing treatment as a burden was independent of gender (p=0.815).
Regarding the existence of possible conflicts or disputes related to treatment management, 153 (85%) said they never had them, 14 (7.8%) rarely, 12 (6.7%) sometimes and the youngest participant, aged 18, often.
The number of boxes prescribed, the number of medicines taken per day, and the moments of omissions are shown in Figures **2** and **3**. Neither occupation (p=0.12) nor use of a pillbox (p=0.811) influenced the frequency of omissions.
Regarding knowledge of the medicines listed in their prescription, 79.4% said they knew all of them, 1.6% none of them and 18.7% some of them. Knowledge of treatment was independent of profession (p = 0.5).
43% used a pillbox and 95% of them were satisfied and felt it met their needs. There was a link between pillbox use and gender (p = 0.03), women tending less to use pillboxes than men.

There was a link between the number of times medication was taken and the use of a pillbox (chi-squared test with a p-value of less than 0.0001).

Treatments were prepared in advance for 51.1% of respondents, including 64% on a weekly basis, 30% daily and 5% monthly.

When medicines were prepared on a weekly basis, Sunday and Monday were the most common days chosen (31.2%).

DISCUSSION

Summary

In this quantitative study, we assessed the concrete conditions of MM at home among 180 chronically ill patients recruited in a primary care setting.

Strengths and limitations

Our study sample is representative for the French population, living with one or more chronic conditions (5).

The inclusion criteria were simple, and the populations studied represented people consulting general practices, which facilitated recruitment and resulted in a response rate of 60%, which is remarkable for a survey among French GPs, who are regularly invited to participate in surveys, and may have not much time to participate in surveys. The anonymous questionnaire could be completed in the waiting room, so people could answer freely and without the impression of direct judgement by the doctor or with the doctor's help, which made it possible to open a dialogue about compliance. It was interesting to ask doctors if they had themselves a chronic condition and if they used a pill box. There may have been reporting and recall bias, as well as fatigue in filling in the questionnaire, which was relatively long. A selection bias for the GPs choosing their patients and the limitations of questionnaire surveys without other checks on actual behaviour as well as declaration bias are possible. Furthermore, patients who needed assistance from the GP to complete the survey may have selected answers according to social desirability.

Comparison with existing literature

According to INSEE, the population with a CD in France represents about 41% of women and 39% of men, giving an odd ratio of 0.95%. (5).

With an odd ratio of 0.91, our sample population is comparable to the general population.

The median age was 66.5 years, with the majority over 65 (63%), 46.5% between 55 and 75, and 37.5% over 75. Our results are in line with those of INSEE in 2017, with almost half of patients aged 55-59 and more than 70% of men and women aged 75 and over. (5).

For the 55-75 age group, we found a good level of representativeness, unlike the 75+ age group. This is due to recruitment bias, as older patients are more dependent and more likely to attend the practice.

Our sample included a higher proportion of retired people than in the general population, probably due to selection bias within the practice, where they consult more frequently than people who are still working.

The place of storage and its risks

A qualitative study in New Zealand showed that the kitchen and bathroom were the most reported locations, ahead of convenience and the desire not to forget, despite the high temperatures and humidity that make these rooms unsuitable for storage. (11). In our study, we confirm these locations.

Temperature variations, humidity problems and lack of airtightness lead to deterioration in the chemical composition of medicines. Inappropriate storage locations and methods were also identified in the study by Beuscart et al. They surveyed 1,370 patients with an average age of 81.5 years who took an average of 9.3 medications daily. Of these, 743 (54.2%) had a home visit with examination of the home medicine cabinet. Poorly located cupboards (in 15% of inspections), medication storage problems (21.7%), expired medications (40.7%), potentially inappropriate medications (15.0%), several different generic versions of the same medication (19.9%) and redundant medications (20.4%) were identified (12).

The multiplication of storage locations, as reported by 9 among our participants, can lead to forgetfulness and the risk of errors.

Intentional and unintentional non-adherence

Non-adherence is a common phenomenon with potentially serious medical and economic consequences and can be unintentional or intentional. A person may deliberately choose not to take their treatment (intentional non-adherence) (13). Fear of side effects, not feeling the need to take their medication, or just not want to take it can be reasons for this phenomenon. In our study, 61.1% of participants reported forgetfulness, the majority of which appeared to be unintentional, given the open-ended responses (Table 4).

A study of 134 patients with type 2 diabetes showed that the strength of the habit was significantly associated with medication adherence (13).

An online survey of 3,000 people with cardiovascular disease showed that habitual compliance (also known as unintentional compliance) was associated with trust in the doctor and having enough information about the disease and treatment. (13). In our study, 96.7% of patients took their treatment routinely. Few validated methods exist for measuring adherence directly at home (14).

The pillbox and other tools

Many tools exist and are being developed to help patients promote their autonomy and manage their treatment of their CD. The patient-centred or patient empowerment approach encourages us to observe and listen to patients' needs and to propose appropriate solutions. (15).

58.2% of the population surveyed reported missing pills without a pillbox.

Of those who did not use a pillbox, 41.7% never forgot to take their medication, compared with 35% of those who used a pillbox. This result is surprising and contradicts the expectation that pillbox users would be more compliant than non-users. (16).

The pillbox is a management tool. They come in different shapes and sizes, depending on the patient's needs and preferences: The daily pillbox: usually contains 4 compartments for taking morning, noon and evening medication; the weekly pillbox usually contains 7 compartments with 4 compartments; the connected pillbox allows you to plan your treatment and check that you are taking your medication as prescribed, and if you forget to take your medication, you can alert the patient or someone close to you by sound reminder, text message, e-mail or notification on your tablet. Some electronic pillboxes are linked to a service that alerts the pharmacist if the pillbox is not opened (17).

A pilot study has been conducted on the acceptability of using an intelligent pillbox to improve patient compliance in primary care (18).

There are many other management tools available, such as an Excel® spreadsheet or simply using free paper. Several telephone applications for reminding people to take their treatment exist and combine different services, such as reminders, automatic integration with patients' electronic diaries, and recording of information about the patient and the context in which the treatment is being taken.

Mobile health (mHealth) is now the subject of a best practice reference framework on applications and connected objects in health, published by the French High Authority of Health (19).

Implications for Research and practice

Among our participants, declared conflicts (15%) and burden (30%) due to MM at home. This is an important information for the GP, who must consider these psycho-social aspects of MM, because they can reduce compliance.

In our sample, 61% of respondents seldom or often forgot to take their medication and 18.7% did not know the medication on their prescription.

It is important to review and to optimize the practicalities of prescribing together with the patients through a person centred and shared decision-making process.

When prescribing and renewing prescriptions, GPs should remind patients of the therapeutic purpose of each medicine. Prescriptions must be written correctly and legibly as patients rely on them to prepare their pillboxes and sometimes as their only aid to compliance. As a result, poorly written or illegible prescriptions can be a source of error.

Some business software packages, are configured to print a pillbox in tabular form, which can be given to the patient along with the prescription. More and more networked tools are being developed.

Ideally, the number of boxes prescribed should be reduced to the minimum necessary, as in the case of treatments that combine two active molecules, particularly for high blood pressure. Wherever possible, taking medication in the morning or at lunch seems to reduce the number of missed doses, which are mostly forgotten in the evening (40%). Offering pillboxes suitable for travelling, or miniature pillboxes for outings, would reduce the number of forgotten doses during short or long trips (19%).

Finally, whenever possible, it is useful and appropriate to organise a home visit to find out how to store and prepare medicines, how to use reminders and how to take them orally (alone or with assistance), as certain conditions such as rheumatoid arthritis or Parkinson's disease can make it technically difficult to take a medicine (difficult to hold).

In France, home visits by GPs have become increasingly rare since 2005 (22,23).

However, the benefits of preventive home visits for the elderly chronically ill population have been demonstrated. Frese et al. showed a reduction in mortality and a 22% lower risk of admission to a nursing home (24). Limatta et al. highlighted positive effects on health-related quality of life at no additional cost from multiprofessional preventive home visits. (25).

The GIRERD questionnaire can be used during regular follow-up visits to assess adherence using six simple questions (26). In addition, difficulties with MM at home (from reading the prescription to storing, preparing the pillbox, and taking the medication) can be easily identified by the clinical pharmacist during the pharmacy visit, thus promoting medication adherence in CD (12,27).

CONCLUSIONS

Unintentional forgetfulness is common among chronically ill people and can be easily identified and corrected by discussing home MM during consultation. If necessary, offering tools (pillbox, telephone alarm, application) adapted to the personal needs and preferences of people taking a daily oral treatment, can contribute to a better compliance.

As far as the frequency of omissions remains the same with or without a pillbox, repeated intervention by the GP is essential to optimise adherence and to remind the indication for each medication. Finally, the GPs must be aware (and explore) that MM at home can be a source of possible burden for patients themselves and or their relatives as well as for conflicts, likely to reduce compliance.

Funding:
No funding.

Ethical approval:

8

As this type of study is not subject to the French legislation on clinical trials (government decree 2016-1537, dated November 16th, 2016), neither registration with the CNIL nor approval by an independent ethics committee was necessary.

9

REFERENCES

1. Coste J, Valderas JM, Carcaillon-Bentata L. The epidemiology of multimorbidity in France: Variations by gender, age and socioeconomic factors, and implications for surveillance and prevention. PLOS ONE 2022;17: e0265842. https://doi.org/10.1371/journal.pone.0265842

2. adsp n° 72 - Chronic diseases [Internet]. [cited 24 June 2023]. Available at: https://www.hcsp.fr

3. WHO. Noncommunicable diseases [Internet]. [cited 16 Sep 2023]. Available at: https://www.who.int/fr/health-topics/noncommunicable-diseases

4   Bagein G, Costemalle V, Deroyon T et al. [Health state of the population in France.] L'état de santé de la population en France. DREES. 2022; Available at: https://drees.solidarites-sante.gouv.fr

5. INSEE [Health status of the population-France]État de santé de la population - France, portrait social | Insee [Internet]. [cited 24 June 2023]. Available at: https://www.insee.fr/fr/statistiques

6. Cottin Y, Lorgis L, Gudjoncik A et al. Treatment adherence: concepts and determinants. Archives of Cardiovascular Diseases Supplements; 4(4):291-8. Available at: https://doi.org/10.1016/S1878-6480(12)70845-5

7. Reach G. Intentionality in long-term treatment adherence. Bulletin de l'Académie Nationale de Médecine [Internet]. Jan 2022 [cited 5 Oct 2023];206(1):82-6. Available at: https://linkinghub.elsevier.com/retrieve/pii/S0001407921003800

8. World Health Organization. Adherence to a long-term therapies. Evidence for action. [Internet]. 2003. Available at: http://www.who.int

9   Jaffiol C, Godeau P, Grosbois B. Improving management of chronic diseases by generalist practitioner Bulletin de l'Académie Nationale de Médecine [Internet]. June 2016 [cited 11 Oct 2023];200(6):1225-40. Available from: https://doi.org/10.1016/S0001-4079(19)30641-7

10. Francine D. [The risk of medication at home]. 2019; Available at: https://www.has-sante.fr

11 Hewson C, Shen CC, Strachan C et al. Personal medicines storage in New Zealand. J Prim Health Care. 1 June 2013;5(2):146-50.

12. Beuscart JB, Petit S, Gautier S et al. Polypharmacy in older patients: identifying the need for support by a community pharmacist. BMC Geriatr. 2019 Oct 21;19(1):277. doi: 10.1186/s12877-019-1276-y. PMID: 31638909; PMCID: PMC6802481.

13. Reach G, Benarbia L, Bruckert E et al. <p>Intentionality in adherence to long-term therapies. Results from an online survey of 3,001 patients with cardio-metabolic pathologies in France. Dove Press PPA [Internet]. 11 Aug 2021 [cited 14 Oct 2023]; 15:1739-53. Available from: https://doi.org/10.2147/PPA.S318116

14. Lam WY, Fresco P. Medication Adherence Measures: An Overview. Biomed Res Int [Internet]. 2015 [cited 5 Oct 2023];2015:217047. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4619779/

15 Fayn MG, des Garets V, Rivière A. Understanding the patient empowerment process. Recherches en Sciences de Gestion [Internet]. 2017 [cited 14 Oct 2023];119(2):55-73. Available at: https://www.cairn.info/revue-recherches-en-sciences-de-gestion-2017-2-page-55.htm

16 Schwartz JK. Pillbox use, satisfaction, and effectiveness among persons with chronic health conditions. Assistive Technology [Internet]. 2 Oct 2017 [cited 14 Oct 2023];29(4):181-7. Available at: https://doi.org/10.1080/10400435.2016.1219884

17. Postel-Vinay N, Reach G, Eveillard P. Observance and new technologies: a new look at an old problem. Med Sci (Paris) [Internet]. 1 Aug. 2018 [cited 14 Oct. 2023];34(8-9):723-9. Available at: https://doi.org/10.1051/medsci/20183408020

18 Choi EPH. A Pilot Study to Evaluate the Acceptability of Using a Smart Pillbox to Enhance Medication Adherence Among Primary Care Patients. Int J Environ Res Public Health. 17 Oct 2019;16(20):3964.

19. High Authority of Health(HAS) [Internet]. [cited 14 Oct 2023]. Référentiel de bonnes pratiques sur les applications et les objets connectés en santé [mobile Health or mHealth]. Available at: https://www.has-sante.fr/jcms/c_2681915/fr/referentiel-de-bonnes-pratiques-sur-l

20. Order of 26 August 2002 approving a national agreement on the proper use of care. JORF. Journal officiel de la République française of 30 August 2002, text no. 23 p. 14424. 7.

21. CNAMTS. Home visits [Internet]. [cited 5 May 2017]. Available at: http://www.ameli.fr/professionnels-de-sante/medecins/exercer-au-quotidien/feuilles-desoins/les-visites-a-domicile_finistere.php

22. Frese T, Deutsch T, Keyser M et al. In-home preventive comprehensive geriatric assessment (CGA) reduces mortality - a randomized controlled trial. Arch Gerontol Geriatric. 2012 ;55 :63944.

23. Liimatta H, Lampella C, Laitinen-Parkonnene D et al. Effects of preventive home visits on older people's use and costs of health care services: A systematic review. European Geriatric Medicine. 2016

24. Girerd X, Hanon O, Anangnostopoulos K et al. [Evaluation of compliance with antihypertensive treatment using a questionnaire: development and use in a specialist department.] Evaluation de l'observance du traitement antihypertenseur par un questionnaire: mise au point et utilisation dans un service spécialisé. La Presse Medicale. 2001;30(21):1044-1048.

25. Wormall S, Abbot S. Primary care clinical pharmacists and chronic disease medication adherence. British Journal of General Practice 2021; 71 (712): 496.

     DOI:https://doi.org/10.3399/bjgp21X717485

Table 2: Characteristics of the participating people with chronic diseases

n=180	n	[%]
Type	**180**	
Male	86	48
Female	94	52
Age	66.5 years (18;93)	
>65 years	114	63
Lifestyle		
As a couple or with a family member	133	74
Professional activity	**155**	
Retired	121	67
Employee	21	11
No activity	13	7
Activity before retirement	**78**	
Employee	23	29
Worker	18	23
Managers and professionals	10	13
No activity	11	14
Declared chronic disease		
Hypertension	104	58
Type 2 diabetes	45	25
Dyslipidemia	45	25
Rhythm disorders	41	23
Heart failure	32	18
Depression	27	15
Autoimmune diseases	27	15
Myocardial infarction	18	10
Cancer	18	10
Asthma	16	9
Cerebrovascular accident	16	9

Table 3: Terms of everyday medication management at home

n=180	n	[%]
Who collects the medicines from the pharmacy?		
The patients themselves	139	77
The spouse	35	19
A family member other than the spouse	15	8
Home delivery by pharmacy	4	2
The nurse	3	1.6
Storage of medicines	n	[%]
Medicine box	85	47
Plastic box	45	25
Medicine bag (paper or plastic)	20	11
Other: trays, worktop, handbag, drawer	14	8
Drug storage facilities	n	[%]
Cusine	78	43
Bathroom	43	24
Salon	25	14
Room	24	13
Cellar	10	5.5
Multiple locations	9	5
Who prepares the medicines?	n	[%]
The patients themselves	153	85
Spouse	13	7
Nurse	9	5
Family and friends	5	3
Adherence to treatment	n	[%]
Never forgot to take	70	39
Rarely forgot to take	68	38
Sometimes forget to take	36	20
Often forget to take	4	2
Treatment reminder mode	n	[%]

|		
Out of habit	147	97
Home nurse	5	3
Telephone alarm	4	2
Alarm clock	3	1.6
At mealtime	3	1.6
Telephone application	1	0.5
Frequency of forgetfulness with vs. without a pillbox	**With vs Without**	**[%]**
Never	27 vs 43	35 vs 42
Rarely	31 vs 37	41 vs 36
Sometimes	16 vs 21	21 vs 20
Often	2 vs 1	3 vs 1
Reported reasons for forgetting medication	**unintentional**	**intentional**
"I don't like taking pills"		1
"I'm afraid of the side effects"		1
"I feel good so I forget"	1	
"Recent change in treatment"	1	
"Memory problems; forgetting to prepare"	2	
"Fatigue"	9	
"Away from home, restaurant; travel"	25	
"Concerns"	20	
"Pace of life (coming home late from work)"	19	
"Distractions; pillbox out of sight"	13	
"Aerosols"		

Several answers were possible.

Figure 2: Number of pillboxes prescribed (lines of prescription) and pills taken per day
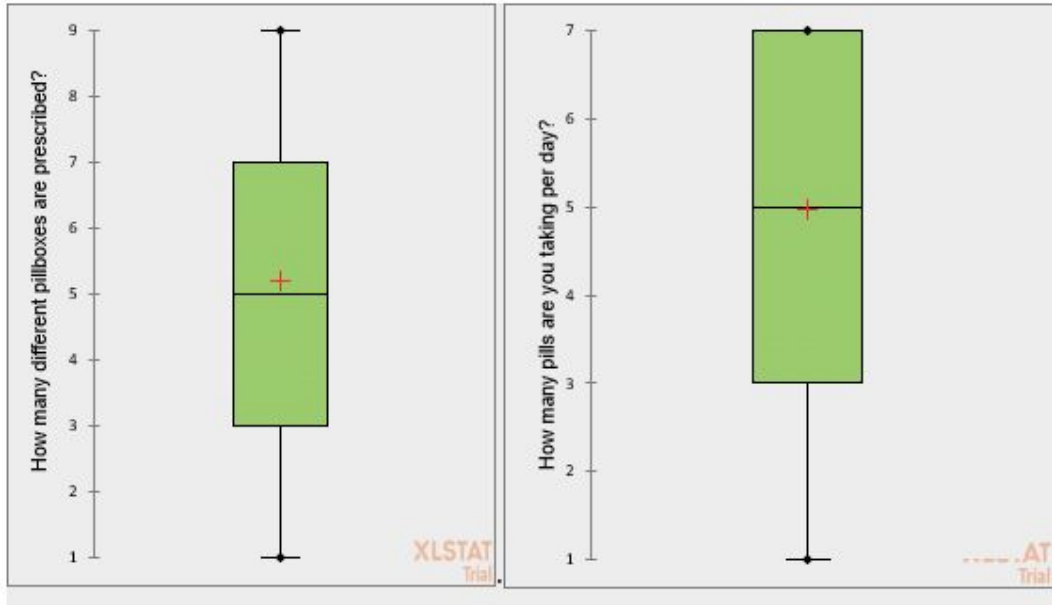
Figure 3 : Frequency and moments of omissions through a day

Frequency and moments of omissions through a day

- Bedtime 6%
- Morning 30%
- Lunchtime 24%
- Evening 40%

coucher · matin · midi · soir
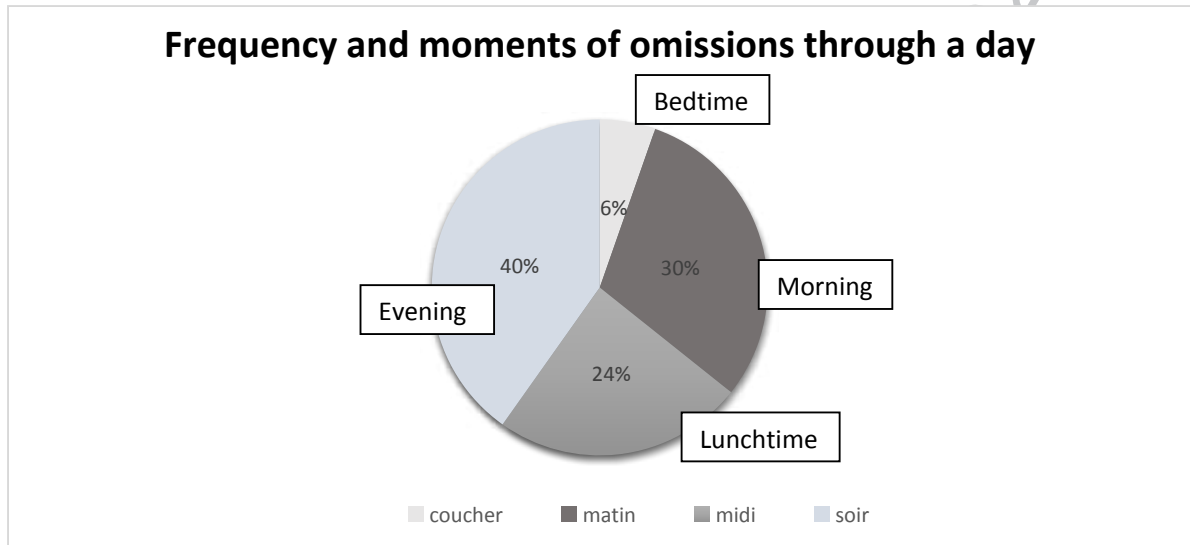
Figure 1: Age distribution of the participating chronically ill patients