Contribution of Flexig mobile application to assess adherence of patients treated with immunoglobulins in chronic diseases

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Background: Long-term therapeutic adherence remains an essential challenge for better management of chronic diseases. It is estimated at 50% in developed countries.

Objective: The study aimed to evaluate, under real conditions, the influence of satisfaction with Flexig use on adherence to subcutaneous immunoglobulin home-treatment therapy in a sample of French patients with chronic dysimmune diseases.

Methods: This is a 2-year prospective cohort involving 241 patients from several hospitals in France whose data were extracted from the Flexig 2.0 mHealth application. Satisfaction was assessed by System Usability Scale (SUS) and user experience by User Experience Questionnaire (UEQ). Adherence to Ig therapy was assessed by medication possession rate. We analyzed the relationship between Flexig user satisfaction and adherence to treatment, as well as determinants of adherence.

Results: Most patients (82.7%) were being treated for an immunodeficiency, versus 17.3% for a chronic autoimmune and inflammatory disease. Almost all patients (97.9%) received subcutaneous immunoglobulin therapy. The patients' ages (means ± SDs) were 36.5 ± 18.3 years, disease duration was about 6 years, and 58.5% were men. Flexig user satisfaction was 76.2 ± 8 (System Usability Scale), associated with good user experience reported on UEQ. Adherence rate was 99.7%. Time on app, disease duration, and Flexig user satisfaction were statistically predictive of adherence to IgG therapy. High adherence to Ig therapy was associated with good satisfaction with using Flexig ($P < .0001$).

Conclusion: Adherence to Ig therapy in chronic dysimmune disease was strong and was associated with good satisfaction among Flexig users, suggesting that electronic support may be a valuable compliance aid. (J Allergy Clin Immunol Global 2024;3:100173.)

Key words: *Therapeutic adherence, Flexig, mHealth app, subcutaneous immunoglobulin, chronic dysimmunity diseases, home monitoring, immunoglobulin, SUS score, UEQ scale, MPR*

Human polyvalent Ig preparations are nowadays used for the treatment of a variety of medical conditions, both for their ability to fight infections as replacement therapy and for their anti-inflammatory and immunomodulatory effects.[1] Intravenous immunoglobulin (IVIG) and subcutaneous immunoglobulin (SCIG) are the cornerstone of treatment for patients with primary immunodeficiencies, who are at high risk of frequent and/or severe infections.[2] Immunosupplementation with Ig reduces both the frequency and severity of these infections,[3] prevents complications (eg, bronchiectasis), and improves patient quality of life.[4]

Chronic immune-mediated neuromuscular diseases require complex treatment regimens, in which Ig may play an important role for some patients.[5] According to the European Federation of Neurological Societies, Ig is recommended as part of treatment regimens for Guillain-Barré syndrome, chronic inflammatory demyelinating polyradiculoneuritis, and multifocal mononeuropathy.[6,7] The inflammatory and autoimmune nature of dermatomyositis and polymyositis warrants immunosuppressive or immunomodulatory therapy. Thus, IVIG or SCIG are used as a second- or third-line treatment.[8-10] There is considerable evidence in the literature supporting the efficacy of Ig in recurrent or corticosteroid-refractory dermatomyositis or polymyositis.[11] SCIG has emerged as an alternative therapy to IVIG and has been successfully used for the treatment of idiopathic inflammatory myopathies.[5,12] Self-administration of SCIG at home may be preferable for many patients. It is often associated with very few or rare adverse events.[5,13] It may also be more economical by reducing the hospital visits inherent in IVIG administration.[14] In contrast, IVIG may be accompanied by numerous systemic adverse effects.[15]

The World Health Organization estimates that only half of patients treated for chronic diseases (CD) follow their treatment over the long term, and probably only a third of them follow the recommended administration of this treatment. The impact of poor adherence is growing as the burden of CD increases worldwide and life expectancy lengthens.[16,17] Long-term poor adherence could seriously compromise treatment efficacy, thus negatively influencing disease progression in terms of risk of worsening or developing complications.[3,4] This affects patients' quality of life and increases health care costs. In France, nonadherence concerns almost half of the patients with CD and is

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Received for publication February 22, 2023; revised June 9, 2023; accepted for publication July 12, 2023.

Available online September 26, 2023.

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2772-8293

https://doi.org/10.1016/j.jacig.2023.100173

Abbreviations used
CD: Chronic disease
CDD: Chronic dysimmune disease
ID: Immunodeficiency
IVIG: Intravenous immunoglobulin
MPR: Medication possession rate
SCIG: Subcutaneous immunoglobulin
SUS: System Usability Scale
UEQ: User Experience Questionnaire

estimated to cost about €2 billion per year, 1,000,000 hospital days, and 8,000 deaths.[18]

Therapeutic adherence refers to patient compliance with aspects of the drug treatment such as dosage and treatment duration to completion (persistence); it is affected by patients' intrinsic processes, such as attitude and motivation to follow treatment. This involves patients' conscious approval to manage their disease, their agreement to treatment, and their active and voluntary participation in achieving a therapeutic outcome.[19]

However, a variety of complex and multifactorial determinants may be responsible for decreased adherence to treatment.[20] The World Health Organization describes 5 dimensions of nonadherence: socioeconomic factors, patient condition, patient treatment, patient disease, and the health care system.[17]

Among patients with CD, forgetfulness is the most frequently reported reason for nonadherence. It is estimated that >60% of individuals identify forgetfulness as their primary explanation for nonadherence.[20,21] Mobile health (mHealth) interventions were initially aimed at collecting data on people's health, management, and treatment experience. They also demonstrated their ability to effectively reduce medication forgetfulness in several series. They enabled the implementation of personalized functionalities: medication reminder strategies, prescription refills, and biometric checks. These devices can improve therapeutic education and motivation as well as help create good habits.[22-24] Consequently, these devices are now an increasingly common strategy to support adherence and self-management in CD.[25-28] This is the case for the use of automated medication reminders, dose tracking, and medication management instructions, which are all simple interventions but are associated with improved adherence and better management of patients with CD.[29,30]

Few studies in the literature have investigated the influence of the use of mHealth applications on adherence to Ig therapy in patients followed for chronic inflammatory and autoimmune dysimmunity diseases. The objective of this study was to evaluate, in real conditions, the satisfaction of Flexig mHealth users, to measure the influence of this satisfaction on adherence to Ig treatment, and to identify determinants associated with treatment adherence in this population.

METHODS

Launched in early 2018, the Flexig 2.0. mHealth app (flexig.com) is available and downloadable on both major mobile app operating systems, the Android Store and the Apple Store (iOS). It was funded by Octapharma laboratory and was developed in collaboration with the agency Interaction Healthcare, health care professionals, the Reference Center for Inherited Immunodeficiencies (CEREDIH), and patient associations, including IRIS (an association of patients with primary immunodeficiencies) and AFNP (French association against neuropathies). Its objective is to coordinate the care pathway and respond to patients' needs.

The Flexig platform aims to be a digital solution allowing the coordination of actors within the care pathway, from the doctor to providers and to patients, in order to increase treatment adherence. It consists of a mobile application for patients and a responsive web platform for health care professionals. All data are managed by an approved health care data server.

Study design

Our observational patient cohort was treated with Ig for chronic dysimmune disease (CDD), conducted as part of routine medical practice. CDD included immunodeficiencies (IDs) and chronic autoimmune and inflammatory diseases. Patients treated with Ig, administered either subcutaneously at home or intravenously in the hospital, were recruited in different French hospitals from 2018 to 2020. Patients were recruited in the mHealth application Flexig 2.0 with the support of IRIS, AFNP, and CEREDIH by a snowball sampling method.

Inclusion of patients in the Flexig platform was voluntary and was left to the discretion of the clinicians, who were free to propose it to patients meeting the study criteria. The pace of patient follow-up was based on the medical-visit schedule. Specialist physicians were responsible for prescribing Ig (type, dose, treatment duration, decision to initiate SCIG). The dose was individualized for each patient according to clinical and pharmacokinetic response. Subcutaneous infusion for home treatment was supervised by the physician.

Patients were trained in pump use, infusion techniques, treatment diary keeping, and identification and reporting of serious adverse events. Data were entered by the patients themselves directly into Flexig mHealth.

The data collected included date of injection, volume, dose, infusion rate, infusion duration, and injection site for SCIG.

The following features were integrated into Flexig to ensure treatment adherence: injection schedule; push notifications: alerts for Ig injections, appointments, vaccines; real-time tracking of Ig injections; tracking of intercurrent events during and between injections; biological markers' response treatment (IgG residual); and storage of medication information.

Data collection

We extracted anonymized data from an approved health data hosting from the Flexig mHealth. Study parameters included demographic variables (eg, age, gender, and weight), injection data (eg, number of injections performed; missed injections), and biological variables (eg, residual IgG).

Two evaluation approaches were used: an evaluation of Flexig for usability and functionality, and user content analysis.

Satisfaction assessment

User satisfaction in Flexig was assessed at the end of the data collection period by 2 validated scales.

System Usability Scale

The System Usability Scale (SUS) is a standardized questionnaire created in 1986.[31] It is composed of 10 items and provides

descriptive data to build a satisfaction score for users of a digital application. The scores range from 0 to 100, with ≥75 considered good, average between 50 and 75, and excellent ≥86. A score below 50 indicates major problems in terms of customer satisfaction, with higher scores indicating greater perceived ease of use.[31,32]

User Experience Questionnaire

The User Experience Questionnaire (UEQ), developed in 2008, consists of 26 items divided into 6 subscales (attractiveness, effectiveness, understandability, controllability, stimulation, and originality).[33] UEQ scales cover a complete impression of the user experience. They measure the overall attractiveness of a product, its ease of use, its effectiveness and controllability, and finally its originality and stimulating qualities.

UEQ scales can be grouped into pragmatic quality (insight, efficiency, reliability) and hedonic quality (stimulation, originality). Pragmatic quality describes task-related aspects of quality and hedonic quality describes non–task-related aspects of quality. In order to situate the user experience evaluation, a benchmark database with the results of UEQs for 452 different products was used. This comparison ranks the evaluated product on each scale using 5 categories: excellent (is in the top 10% of the results), good (10% is better, 75% is worse), above average (25% is better, 50% is worse), below average (50% is better, 25% is worse), and poor (is in the bottom 25% of the results).[34,35]

Treatment adherence assessment

Three approaches were used to measure medication adherence in Flexig: changes in missed injections; changes in residual IgG; and calculation of medication possession rate (MPR).

Patient compliance reflects ability to follow the prescribed treatment regimen. It is often expressed as MPR.[27] We used the following formula to calculate the average percentage of Ig treatment adherence:

$$\text{MPR} = \frac{\text{Total no. of injections assumed to have been administered}}{\text{Total no. of injections that should have been administered}} \times 100$$

A patient was considered adherent to Ig therapy if the MPR was between 80% and 100%.[27,28]

Statistical analysis

Continuous variables are presented as means and SDs; categorical variables are presented as proportions (%). Analyses of SUS score and UEQ scale were conducted by specific software, including SUS Calculator Package v1.42 (available free at measureusability.com) and licensed UEQ Data Analysis Tool v8.

After analyzing UEQ results, several types of information were presented. For a diagram of the average values of each dimension, neutral or negative values are those we will pay more attention to. For the distribution of responses by item, values outside the neutral zone are then considered as positive or negative points of the product.

The consistency of SUS items was measured by Cronbach alpha. Items belonging to the same scale should generally show a high correlation. Many authors assume that a scale must have an alpha value of >0.7 to be considered sufficiently consistent.[31-32]

The MPR "Drug possession rate" allowed calculation of compliance. An MPR of ≥80% corresponds to good adherence.[27]

Univariate analysis was performed to assess the association between changes in adherence parameters and associated factors by linear regression.

Multivariate analysis was used to estimate the association between changes in adherence parameters and duration of Flexig platform use by a mixed effects model, after adjusting for patient as a random effect variable; and sex, age, disease duration, and SUS satisfaction score as fixed effect variables. Results were presented as *t* ratio at the .05 significance level, confidence intervals, and predictions using dedicated graphs.

Analyses were performed by R software v4.1.1 for Windows and the trial version of SAS JMP Pro predictive analysis software.

Patients were informed of the study objectives and constraints and provided informed consent before participating. Our study complied with the requirements related to patient satisfaction surveys according to the public health code (article R1121-1 modified by decree 2017-884). Patient data were processed in accordance with the French Data Protection Act of January 6, 1978.

RESULTS

Sociodemographic characteristics

A total of 241 patients treated with Ig for CDD were followed up and included in this analysis. A total of 58.5% of the patients were male with an overall mean ± SD age of 36.5 ± 18.3 years. Almost all patients (97.9%) were treated with SCIG. Most of them (82.7%) were treated for IDs, versus 17.3% for chronic autoimmune and inflammatory diseases. In these disease groups, mean age was 34.5 ± 18.0 years versus 45.9 ± 16.6 years, respectively, with a disease duration of 6.3 ± 7.5 years versus 6.6 ± 6.7 years, and a residual IgG at entry of 4.2 ± 1.4 g/L versus 13.4 ± 7.7 g/L (Table I).

Satisfaction of Flexig mHealth users

The mean ± SD satisfaction SUS score was 76.2 ± 7.9 (Fig 1). For 207 of 241 study patients, the level of satisfaction assessed by SUS was >86. The reliability of the SUS was checked by Cronbach alpha at 0.87.

Concerning UEQ scales, patients' user experience in the Flexig platform compared to the benchmark was 85.5. It was 1.8 ± 0.1 on attractiveness; 1.7 ± 0.4 on insight; 1.8 ± 0.1 on effectiveness; 1.6 ± 0.1 on reliability; 1.5 ± 0.1 on stimulation; and 1.2 ± 0.1 on originality. This corresponds to good attractiveness,

TABLE I. Characteristics of Flexig platform user profiles

Characteristic	Whole study population	ID	Chronic autoimmune and inflammatory diseases
Subjects, no. (%)	241	199 (82.57%)	42 (17.43%)
Gender, % (95% CI)			
Male	141	116 (48.13)	25 (10.37)
Female	100	83 (34.44)	17 (7.05)
Age (years)	36.5 ± 18.3	34.51 ± 18.0	45.90 ± 16.6
Weight (kg)	64.4 ± 24.5	63.73 ± 23.4	73.44 ± 20.7
Disease duration (years)	6.4 ± 7.3	6.33 ± 7.5	6.56 ± 6.8
Residual plasma IgG levels (g/L) at start of Flexig application use	5.8 ± 4.9	4.19 ± 1.4	13.38 ± 7.7

Data are presented as means ± SDs or % unless otherwise indicated.

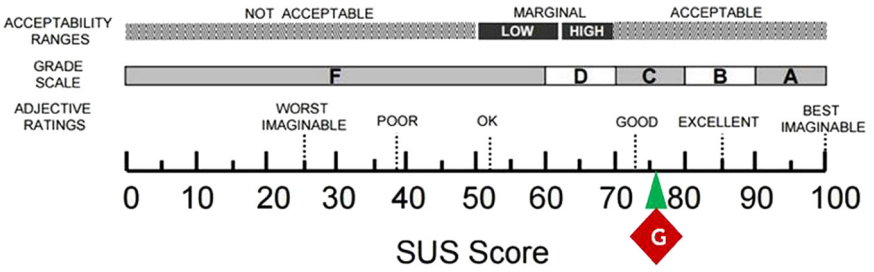

FIG 1. Mean SUS score evaluating Flexig user satisfaction.

comprehensibility, and effectiveness of the Flexig application. Our data showed sufficient consistency of the 6 subscales of the UEQ scale (Fig 2). The respective Cronbach alpha and Guttman lambda-2 scores for each subscale are as follows: attractiveness, 0.91 and 0.91; insight, 0.80 and 0.80; effectiveness, 0.78 and 0.78; reliability, 0.56 and 0.62; stimulation, 0.79 and 0.79; and novelty, 0.70 and 0.71.

Adherence to Ig treatment in Flexig

The impact of persistence and adherence to treatment were almost identical in the 2 groups of conditions with overlapping MPRs in the first and second years. Overall, adherence to Ig therapy remained very high, at 99.66%, in the Flexig mHealth application (Table II).

Measuring missed injections

Overall, the rate of missed injections after 2 years of follow-up in the Flexig platform was very low, at <1% (ie, 42/21,861 prescribed injections) in both dysimmune disorder groups. A significant trend of increasing missed injections was observed in both groups over the semesters (Fig 3, Tables II and III).

Measurement of residual IgG

The adherence to the treatment was observable by a trend toward a numerical increase in residual IgG in plasma over the 2 years of follow-up in the Flexig platform, mainly concerning patients treated for Ig IDs, in whom this variable is relevant.

Correlates and predictors of missed injections to Ig therapy

The subject effect, considered as a random effect, did not show intersubject variability concerning missed injections. This means that variables other than the subject itself would influence forgetting injections. In multivariate analysis with the mixed effects model for the ID disease group, our data showed a positive association between forgotten injections and both satisfaction level and the duration of Flexig use at semesters 2 ($P < .0001$), 3 ($P < .0001$), and 4 ($P = .008$).

On the one hand, higher user satisfaction was statistically predictive of good adherence to Ig therapy regardless of disease type. On the other hand, the number of missed injections was significantly proportional to the time spent in the Flexig application. Finally, the increase in forgotten injections over time was statistically significant (Tables III, IV, V, and VI).

Correlates and predictors of residual IgG

For the ID disease group, a statistically significant positive linear association existed between increase in plasma IgG and duration of Flexig use by patients ($P < .0001$), as well as with level of Flexig satisfaction users assessed via their SUS scores ($P < .0001$). Conversely, a slight negative association was observed between residual IgG levels and disease duration ($P = .0205$) (Fig 4).

DISCUSSION

This study aimed to demonstrate, in real-life conditions, the influence of satisfaction level and Flexig user experience on

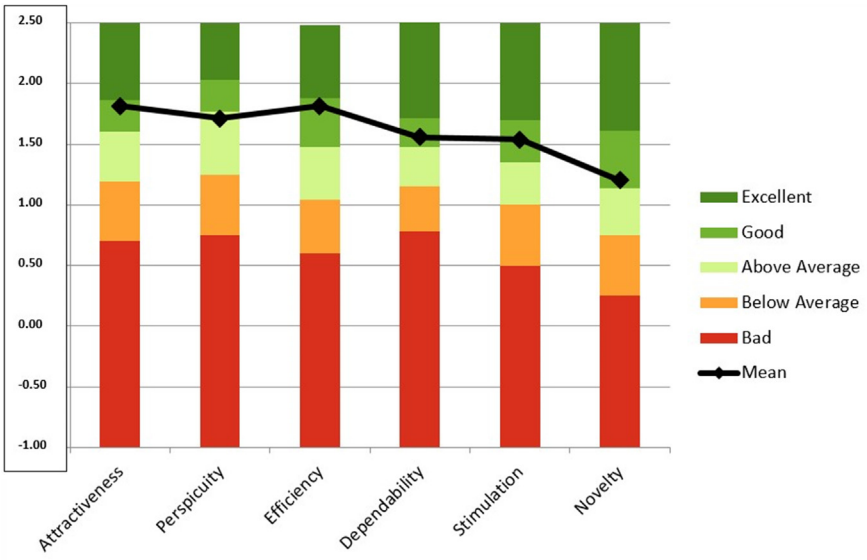

FIG 2. UEQ user experience compared to benchmark assessing patient satisfaction with Flexig platform.

TABLE II. MPR evaluating adherence to treatment with Ig in Flexig application over 2 years

	Dysimmune disorder		
Parameter	**ID**	**Chronic autoimmune and inflammatory diseases**	**Overall**
Year 1			
No. of injections prescribed	9138	1980	11,118
No. of injections administered	9132	1980	11,112
S1	2	0	2
S2	4	0	4
Total injections missed during year 1	6	0	6
Calculation of MPR (%)	99.93%	100%	99.95%
Year 2			
No. of injections prescribed	8946	1797	10,743
No. of injections administered	8918	1789	10,707
S3	5	1	6
S4	23	7	30
Total injections missed during year 2	28	8	36
Calculation of MPR (%)	99.69%	99.55%	99.66%

Data shown are nos. of injections unless otherwise indicated.

adherence to Ig treatment in patients with CDD. The electronic support for self-management by Flexig showed that almost all patients enrolled (97.9%) were treated with SCIG, mainly for IDs (82.7%).

With the evolution of therapeutics, the life-span of patients with CD is increasing, constituting a major challenge for a health care system organized around hospitals, which are better adapted to managing the disease's acute situations.

In the recent literature, weekly injections of SCIG had several advantages: efficacy, confirmed in several studies;[5,15] excellent safety profile; self-administration at home, offering more flexibility and autonomy to patients;[5,13,36-39] positive impact on quality of life;[4,5] and finally economic savings by reducing the cost of care.[14]

The combination of increased life expectancy and the development of increasingly home-based treatments requires support for compliance among patients with CD. By improving treatment adherence, mobile applications can contribute to the effectiveness of treatments; participate in the modification of health behaviors; and increase the possibilities of interactivity, including real-time interactions between patients and health professionals.[40] It is increasingly established that poor long-term therapeutic adherence can seriously compromise the effectiveness of treatment and thus negatively influence the evolution of the disease in terms of aggravation or occurrence of complications.[3,4] The consequence is 2-fold: an alteration in the quality of life of patients and an increase in health care costs.

Satisfaction of Flexig mHealth users

This study provides evidence of the validity and reliability of the SUS score and UEQ scale in the Flexig app in patients treated

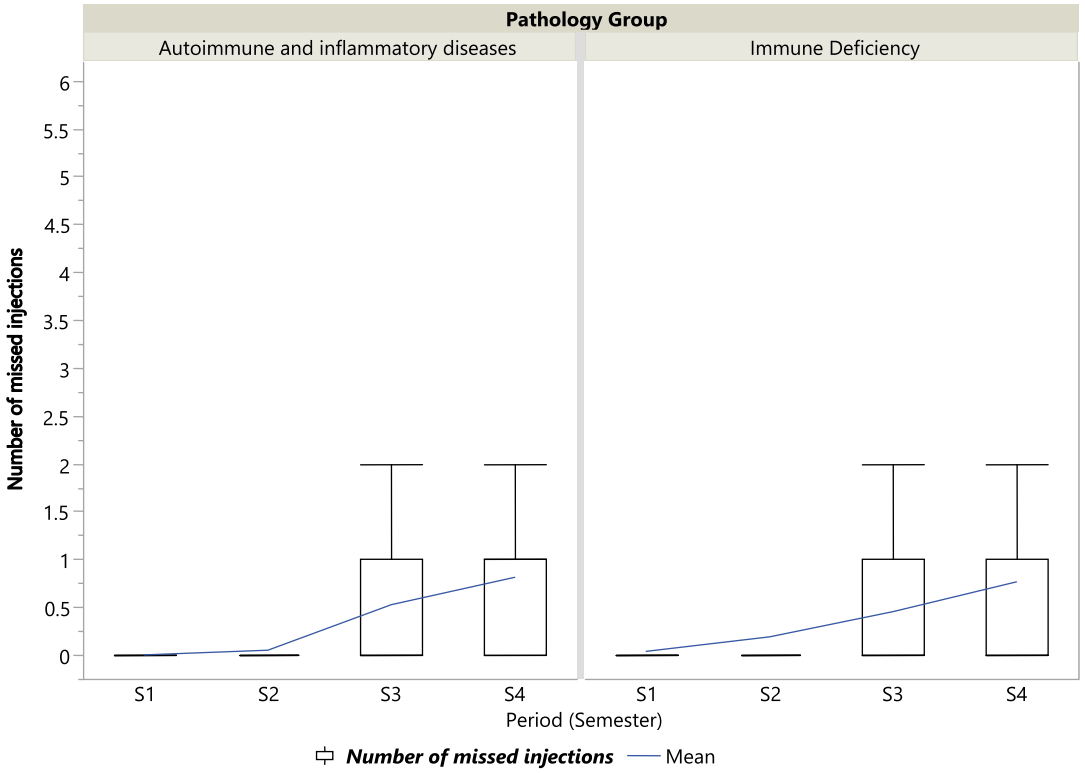

FIG 3. Change in number of missed injections by Flexig users in 2 years.

TABLE III. Estimation of fixed effects parameters for analysis of forgotten injections in ID

Term	Estimation	SE	*t* ratio	*P* > |*t*|	95% CI
Constant	2.83	0.19	15.15	<.0001*	2.46, 3.20
Semester (2-1)	0.15	0.06	2.66	.0080*	0.04, 0.26
Semester (3-2)	0.26	0.05	4.68	<.0001*	0.15, 0.37
Semester (4-3)	0.31	0.05	5.51	<.0001*	0.20, 0.42
Sex (female)	0.02	0.02	0.94	.35	−0.02, 0.06
Age	0.00	0.00	0.01	.99	−0.00, 0.00
Disease duration	−0.00	0.00	−0.12	.91	−0.01, 0.01
SUS score	−0.04	0.00	−16.09	<.0001*	−0.04, −0.03

CI, Confidence interval; *SE,* standard error.
*Statistically significant.

TABLE IV. Regression analysis for residual IgG in plasma of patients with ID

Characteristic	Plasma IgG levels (g/L) compared to period (semester)	Plasma IgG levels (g/L) compared to duration of disease	Plasma IgG levels (g/L) compared to SUS score
R^2	0.06	0.01	0.57
Adjusted R^2	0.05	0.01	0.57
RMSE	0.95	0.95	0.62
Mean response	7.74	7.76	7.74
Observations (or weighted sums)	796	161	199

RMSE, Root mean squared error.

with Ig for CDD (Cronbach alpha at 0.87 for SUS score; benchmark evaluated at 85.5 for UEQ scales).

A total of 86% of patients rated their satisfaction as excellent on the SUS and had a mean score in favor of good satisfaction, which was associated with overall good attractiveness of the user experience by UEQ.

The patients in this study were regular users of cell phones, which can be an important support for monitoring patients with CD. Our results confirmed a good satisfaction level with the Flexig mobile application, with users regarding both usability and experience well. These results are important because the connected health applications and devices, which are available at low

TABLE V. Coefficient estimates of evolution of residual IgG in plasma of patients with ID

Term	Estimate	SE	*t* ratio	*P* > |*t*|
Constant 1	7.86	0.09	80.71	<.0001*
Duration of disease	−0.01	0.01	−1.56	.12
Constant 2	1.22	0.40	3.02	.0029*
SUS score	0.08	0.01	16.24	<.0001*

*Statistically significant.

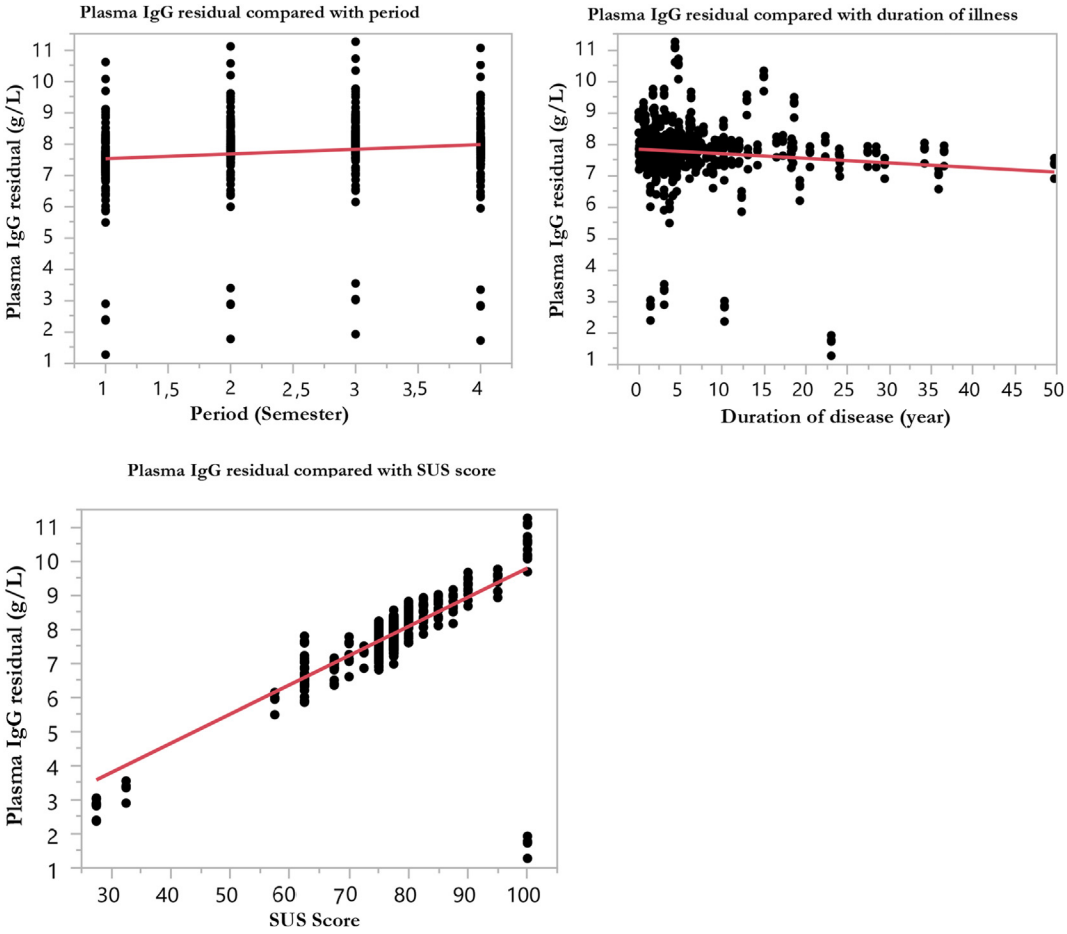

FIG 4. Evolution of residual IgG according to time spent on Flexig application and level of user satisfaction in patients with ID.

cost, cover a variety of fields, including prevention, patient monitoring, and health promotion.[41]

Adherence to Ig treatment in Flexig mHealth application

In our study, adherence to Ig therapy, primarily SCIG, which accounted for the near majority, was found to be very high in the 241 patients in the study. The calculated MPRs at years 1 and 2 were 99.9% and 99.7%, respectively, regardless of disease type, in the Flexig application.

This high adherence to SCIG is reflected in a very low rate of missed injections in this study—less than 1% in both patient groups. Although still very low, the trend in the number of missed injections increases with the time spent in the Flexig. In the literature, forgetfulness remains the most common reason for nonadherence in patients with CD, with forgetfulness ranging from 60%[25] to 79.8%.[20] Many patients simply admit to frequently missing 1 or more doses.[21]

The high adherence rate among patients in our study confirms the hypothesis that self-management support is one of the mechanisms by which mHealth apps interventions facilitate and sustain medication adherence and self-management in CD.[28,42]

Predictors of Ig treatment adherence in Flexig mHealth application

Higher IgG residual levels were associated with good levels of user satisfaction with Flexig, indicating that a positive experience with the platform resulted in greater treatment adherence, regardless of disease type. Adherence still remains very high

TABLE VI. Variance analysis of evolution of residual IgG in plasma of patients with ID

Source	Freedom level	Sum of squares	Median square	*F* ratio	*P* > *F*
Period (semester)	3	46.76	15.59	17.21	<.0001*
Residues	792	717.18	0.91		
Total adjusted	795	763.95			

*Statistically significant.

despite this slight increase in missed injections seen over the years (Table II).

With time, our data show a tendency of increasing forgotten injections despite the use of Flexig application in both disease groups. This late trend in missed injections should alert health care professionals to add other measures in the management of CD, such as motivational and therapeutic education programs to overcome the effects of lassitude.

We must remain cautious because despite the significant contribution of mobile health applications, other factors must be considered, as such as psychological factors, that can influence treatment adherence.

Our data showed time of Flexig use, disease duration, and user satisfaction were statistically predictive of treatment adherence, as measured by residual IgG levels in ID patients ($P < .0001$, $P = .0205$, and $P < .0001$ for SUS, respectively). The random effect (patient) was statistically significant ($P < .0001$), reflecting the interpatient variability of the evolution of the plasma IgG trough level during Flexig use.

Some methodologic limitations should be noted. First, our patient demographics do not allow extrapolation to other groups. Second, the data were collected under real-life conditions and entered onto the platform by the patients themselves or their relatives. For the purposes of this study, we have taken these potential errors to be unlikely to affect our results.

Finally, our data confirm that smartphone apps are a feasible strategy to optimize treatment adherence in CDD patients. The increase in the SUS score is associated with better residual levels of IgG and therefore better compliance (99.7%). Walter et al also showed that patient adherence to SCIG by push therapy was 87.1% in ID associated with a reduction in serious infections and an increase in IgG levels.[43] These compliance rates are far better than the 50% reported in the general population.[16,17] However, we cannot be certain that Flexig increases adherence without a control group.

Conclusion

In this study, we sought to examine, under real-world conditions, how user satisfaction with the mHealth Flexig app can influence adherence to Ig therapy in a sample of patients treated for CDD. Higher IgG residual levels were associated with good satisfaction levels of Flexig users, indicating that a positive experience with the platform resulted in greater treatment adherence.

To our knowledge, this work is one of the first to report the benefits of a mobile health platform on adherence to Ig therapy for CDD. Our results reinforce the hypothesis that electronic self-management support can be a valuable aid to improve Ig therapy adherence and improve the control of chronic autoimmune and inflammatory diseases and IDs in the French population. A randomized study may be needed to confirm the effectiveness of the mHealth application in monitoring patients with CDD.

DISCLOSURE STATEMENT

Octapharma financed the implementation of the mobile application.

Disclosure of potential conflict of interest: The authors declare that they have no relevant conflicts of interest.

Key message

- **Electronic self-management support can improve therapeutic adherence via the Flexig mHealth app in home monitoring patients treated with Ig for chronic dysimmunity diseases.**

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