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Evaluation of community pharmacist follow-up supported by the use of healthcare technology for type 2 diabetes patients

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ABSTRACT

Background: Prevalence of type 2 diabetes is high in Belgium (estimated at over 10%, 1 patient out of 3 being unaware of their diagnosis). Management based on a change of lifestyle and the adoption of health-promoting behaviors, supplemented when needed with drug treatment, prevents complications, improves the patient's quality of life and reduces mortality. Multidisciplinary patient support is essential. In this, pharmacists have a key role, e.g. through therapeutic patient education activities, in which they are increasingly involved. Moreover, research suggests that the use of mobile technologies can be a useful tool for helping patients with their daily life and disease management.

Objectives: This study aims at exploring the benefits of community pharmacist follow-up supported by the use of mobile technologies in the monitoring of individuals with type 2 diabetes. The presented intervention aimed to reinforce the patients' willingness to actively participate in the management of their disease and to adopt favorable health behaviors, in order to increase their level of medication adherence.

Methods: A quantitative quasi-experimental study was conducted in community pharmacies throughout Belgium over a 6-month period with 3 data collection periods (before, during and after the intervention). Primary outcomes, related to the level of medication adherence, and secondary outcomes, considered as markers of the patient's overall health, were analyzed. In addition, qualitative data concerning participants' opinions on their experience were collected.

Results: 66 patients participated in the study, with 50 remaining after 3 months and 46 completing the entire study. Statistical analyses did not show an improvement in the level of medication adherence. This parameter was high from the beginning, reflecting patients with controlled diabetes. However, statistically significant results were observed for systolic blood pressure and waist circumference (both improved), while other outcomes showed a positive trend or remained stable. Patient follow-up by the pharmacist was a positive experience for both parties which noted their interest and satisfaction for the project.

Conclusions: Although clinical results are not conclusive, patients were motivated and the attrition rate was low. Participants showed their interest in participating in this kind of project, opening up opportunities for further studies in the community pharmacy setting. As front-line health professionals, community pharmacists certainly have a key-role to play in therapeutic patient education and mobile technologies could be additional tools in this process.

1. Introduction

In 2021, diabetes was one of the most prevalent chronic diseases affecting 537 million people worldwide. This prevalence is increasing over time and forecasts predict a raise to 634 million by 2030 and 783 million by 2045.[1] In Belgium, prevalence is estimated at over 10% of the

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population, 1 patient out of 3 being unaware of their diagnosis.[2] Specifically, type 2 diabetes accounts for >95% of diabetes cases.[3]

Individuals with type 2 diabetes have increased risk of many microvascular and macrovascular complications. Considering that diabetes is often associated with other cardiovascular risk factors such as smoking, high blood pressure, hyperlipidemia, overweight and sedentary lifestyle, these vascular complications are worrisome.[4] Disease management based on a change of lifestyle and the adoption of health-promoting behaviors, complemented if necessary by drug treatment, prevents complications, improves the patient's quality of life and reduces mortality.[4]

Effective treatment requires good patient adherence with both pharmacological and non-pharmacological measures. Non-adherence can have severe consequences on the patient's health, by increasing the risk of complications and mortality, as well as an economic impact through increased hospitalizations and costs for society.[5]

Among the panel of healthcare practitioners supporting patients with diabetes, the community pharmacist can play a key role. In addition to informing patients and offering them healthy lifestyle and pharmacotherapeutic recommendations, supporting them through educational sessions promoting patients' involvement is also part of his skills.[6] Thanks to his great accessibility and his expertise in pharmacotherapy, the community pharmacist is able to build trusting relationships with patients[7] and become a key person for them about their treatment. Various studies have shown the impact of educational interventions performed by community pharmacists. Their results showed improvements of many parameters of interest for patients with type 2 diabetes such as hemoglobin A1c (A1c) level, blood pressure, cholesterol rates and medication adherence[8–10]

Moreover, it has also been shown that the use of digital technologies in the management of chronic diseases can lead to significant improvements in medication adherence.[11] Comunicare Solutions SA is a company created in 2018 dedicated to connecting patients with their healthcare team through a telemedicine platform. This platform is available in several configurations, corresponding to various chronic diseases such as cancer, chronic obstructive pulmonary disease (COPD), heart failure and diabetes. The platform is divided into two communicating interfaces: a mobile application to be used by the patient and a dashboard to be used by the healthcare team. The mobile application is used to inform patients about their disease and care pathway, facilitate their therapeutic adhesion and communicate some data and feelings to the care team. The dashboard is provided to the care givers in order to access and monitor the patient reported outcomes through the application.[12]

Research suggests that the use of mobile technologies combined with health coaching can help patients in their daily life and disease management.[13] However, only a few studies on the impact of the pharmacist in this process have been published.

This study aimed at exploring the benefits of community pharmacist follow-up supported by the use of Comunicare mobile application for patients with type 2 diabetes. Specifically, impact on medication adherence level as well as on clinical outcomes considered as markers of the patient's overall health, but also as cardiovascular risk factors, were investigated.

2. Methods

2.1. Design

This quasi-experimental study was conducted in community pharmacies throughout Belgium, both in the Dutch-speaking and the French-speaking part of the country. It was an interventional study in which all participants benefited from the intervention consisting of both pharmacist follow-up and access to the mobile application, without a control group. Throughout the study, data were collected in order to perform a statistical quantitative analysis with 3 data collection periods (before the intervention, 3 months after the beginning of the intervention period and at the end of the intervention period, 6 months after the beginning of the study). At the end of the study, qualitative data concerning the participants' opinion about their experience were collected in the form of spontaneous testimonials or round-tables.

2.2. Population

Twenty-one pharmacy managers from Multipharma SC participated in the project. Multipharma SC is a Belgian group of cooperative pharmacies owning 245 pharmacies distributed all over Belgium. These pharmacists were recruited on a voluntary basis after a corporate presentation of the project.

Each pharmacist aimed to recruit around 5 patients by convenience sampling during a routine pharmacy visit. Patients aged 18 years and older, treated with at least one oral antidiabetic drug and owning a smartphone or tablet were eligible for the study.

2.3. Intervention

The intervention presented in this study consisted of therapeutic support including both a personalized follow-up by the pharmacist and access to the Comunicare health application as described below. This intervention intended to reinforce the patients' willingness to actively participate in their daily life and disease management, to adopt favorable health behaviors and to increase their level of adherence.

2.3.1. Pharmacist follow-up

Pharmacist counseling, including basic pharmaceutical care as well as an educational approach based on communication techniques derived from motivational interviewing,[14] was performed on a monthly basis, either during face-to-face interviews in the pharmacy or through a video conferencing system integrated to the application. During his follow-up, the pharmacist addressed different topics related to medication adherence, good medication use, dietary implications of living with diabetes, physical activity, etc. Overall, the pharmacist aimed to improve the patient's health literacy regarding his condition.

2.3.2. Comunicare application

As part of this project, a new configuration of the Comunicare platform specifically tailored to the follow-up of diabetes was created. The application is divided into many sections. The “My medication”, “My follow-up” and “My feelings” sections can be filled in by the patient and then transferred to the pharmacist's dashboard for a personalized follow-up. The data collected in these sections include state of mind, hypoglycemic episodes, blood glucose measurements, medication intake, physical activity, etc. When the pharmacist receives the patient's data on the dashboard, he can use it to individualize the follow-up and adapt it to the patient's needs. The patient also has access to therapeutic education information via the “My advice” section and list his appointments in the “My agenda” section. Moreover, a modern and secure videoconferencing technology is integrated both in the patient mobile application and in the caregiver dashboard. The pharmacist can create a teleconsultation appointment and, in one click, get in touch with the patient. The application supports two languages, French and Dutch, depending on the patient's native language.

2.4. Study schedule

Tested over a period of 6 months, the intervention consisted of four face-to-face interviews and three video calls between the patient and his pharmacist, at a rate of one contact per month (Fig. 1). During this time, the patient had the possibility to use the application installed on his smartphone or tablet as much as needed or wanted on a daily basis.

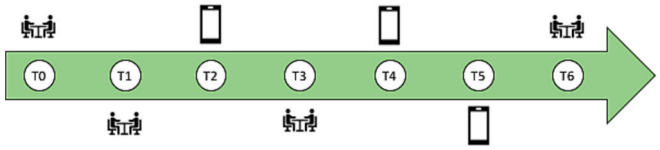

Fig. 1. Interview timeline.

2.5. Data collection and outcomes

The patient's level of medication adherence was defined as the primary outcome. Adherence can be assessed using a variety of methods. On the one hand, there are "direct" methods, such as measurement of serum levels or biological markers; on the other hand, there are "indirect" methods, such as self-assessment questionnaires or counting of unit drug forms. The self-assessment questionnaire is the most widely used and recommended method, as it is accessible, inexpensive, quick and easy to use.[15] However, whenever possible, it is recommended to combine several measurement methods to support the relevance of the results.[16] In this study, the level of medication adherence was assessed in two ways: A1c level, the most reliable biological marker for the assessment of adherence,[17] was measured with a fingertip blood drop sample and using the Afinion Analyzer (ABBOTT) and the self-assessed adherence score was measured using the MARS-5 questionnaire[18] directly embedded as a form in the patient's application. The form was prompted on the patient's screen once at the beginning and once at the end of the study. The Medication Adherence Report Scale (MARS-5) is a simplified form of the MARS-10, created by Horne and Hankins in 2001.[19] This self-assessment questionnaire is used to assess adherence in several diseases, including asthma, hypertension and diabetes. A recent study demonstrated the validity and reliability of this questionnaire in the context of diabetes.[20] The MARS-5 consists of 5 questions relating to non-adherence behaviors. The patient is asked to rate each response on a 5-point Likert scale ranging from 1 (always) to 5 (never). The total score, obtained by adding the scores for the 5 questions, is used to assess the level of medication adherence. The higher the score, closer to 25, the better the level of medication adherence.[19,21]

Clinical parameters were defined as secondary outcomes: systolic and diastolic blood pressure, body mass index (BMI), waist circumference and HDL/LDL cholesterol measured in a fingertip blood drop and using the Afinion Analyzer Lipid Panel (ABBOTT). As well as the weight and BMI, visceral fat, measured by means of the waist circumference, is an important monitoring parameter for individuals with diabetes, as it is also considered to be a risk factor.[22] Patients took their own measurements, under the supervision of the pharmacist, previously trained on the correct use of the equipment. Age, sex and language spoken were collected as sociodemographic data. The evolution of clinical parameters has been used in this paper for experimental purposes and would not be part of a future real-life program, as Belgian pharmacists are not authorized to carry out biomedical analyses.

Data collection of A1c and clinical parameters was carried out before the intervention (T0), 3 months after the initiation (T3) and 6 months after the initiation, i.e. at the end of the study (T6), except for lipids, which were only collected twice due to economic reasons.

Engagement data for the digital application were collected at the end of the study and round tables were organized with patients and pharmacists in order to gather their feedback on their experience of pharmacist coaching on the one hand and of using the application on the other.

2.6. Statistical analysis

Data were analyzed using the R software, version 3.6.1. After investigation of the normality by descriptive statistics, Shapiro-Wilk normality tests, quantile-quantile plots and histograms, variables following a normal distribution were expressed as mean and standard deviation, while those following an asymmetric distribution were expressed using the median and interquartile range. Categorical variables were coded or categorized thanks to a codebook and then expressed according to their frequency distribution (number and percentage). The evolution of the different parameters was studied using a paired means comparison test: Student *t*-test or Wilcoxon signed ranks test. Results were considered significant at the 5% uncertainty level, corrected by the Bonferroni adjustment for multiple comparisons ($p \leq 0.02$).

3. Results

3.1. Recruitment and participation

Twenty-one pharmacists were included in the project and completed the entire study, except for one (pharmacy damaged by flooding). At the initiation of the study, pharmacists faced difficulties with the recruitment of eligible patients: only one third of the pharmacies reached the minimum recruitment target of 5 patients. Two hundred and seven patients were eligible but 133 of them declined to participate. The most frequently reported reasons for refusal were: apprehension about using the application, lack of time, fear of data protection and lack of interest. During the course of the study, the pharmacists had to deal with 28 dropouts which represents a rate of 38%. The most frequently reported reasons for dropouts were: lack of time, lack of interest, sudden illness and failure to visit the pharmacy. This means that 74 patients were recruited and 66 of them participated in the study, with 50 remaining at T3 and 46 completing the entire study (Fig. 2).

3.2. Sample characteristics

Participants were predominantly female (56%) and were aged from 18 to 85 years old, with 75% of them being older than 50. Of the 66

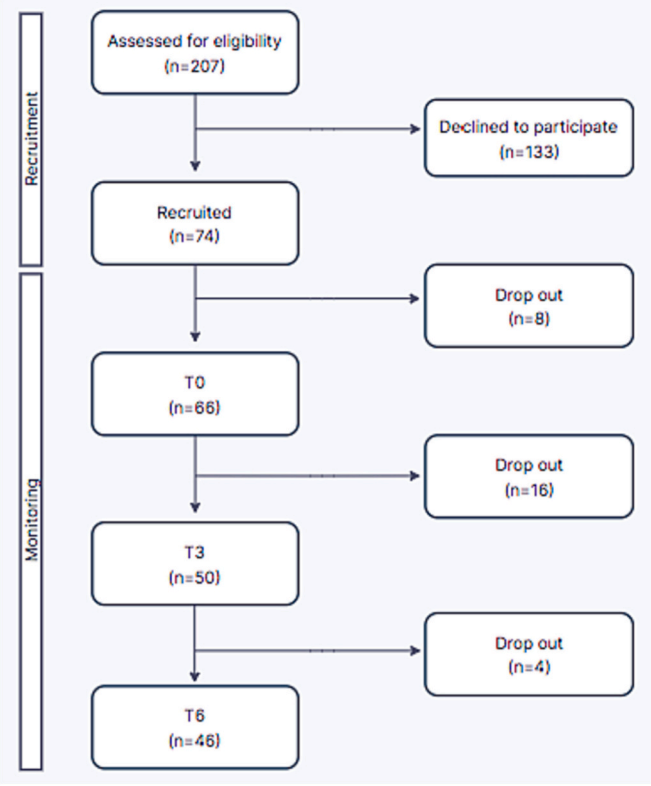

Fig. 2. Flowchart: Patient recruitment and retention throughout the study.

participants, 66% spoke French. Categorized purely on BMI, only 2 participants were considered as having a healthy weight. All the others were either overweight (21%) or obese (48%). For 18 patients, the exact weight was not specified, so calculation of the BMI was impossible. (Table 1).

3.3. Clinical outcomes

Statistical analyses allowed to perform a comparison between the 3 times of data collection for each clinical parameter. (Table 2).

3.3.1. Between T0 and T3

Systolic blood pressure (SBP) ($p = 0.01$) and waist circumference ($p = 0.002$) showed a statistically significant improvement. The SBP decreased on average by 6.6 mmHg while the waist circumference decreased on average by 2 cm. A1c level, diastolic blood pressure (DBP) and weight followed a favorable, but not significant, trend.

3.3.2. Between T3 and T6

No statistically significant change was noted between these two times points. Considering the difference variable, a favorable trend was observed for the weight and waist circumference, while values for A1c and DBP remained stable.

3.3.3. Between T0 and T6

Waist circumference still showed a statistically significant improvement ($p = 0.01$) and decreased on average by 2.4 cm. Considering the difference variable, the other parameters showed a positive trend or remained stable over the course of the study.

3.4. MARS-5 score

MARS-5 scores were very high at baseline (mean of 24.04/25). No significant improvement was observed between T0 and T6 (mean of 24.44/25).

3.5. Engagement data for the application

83% of patients logged on to the application at least once during the study. All pharmacists used the dashboard to view and use patient follow-up data.

3.6. Patients' opinion about the coaching

Patients appreciated the contact with the healthcare provider and the close relationship, the individualized follow-up and the support in pursuing their goals.

Table 1
Sample characteristics ($n = 66$).

Characteristics	n	Frequency (%)
Sex		
Female	37	56.06
Male	29	43.94
Age (years)		
Mean ± SD (range)	56.68 ± 13.95 (18–85 years)	
< 50	17	25.76
50–65	27	40.91
> 65	22	33.33
Spoken language	44	
French	22	66.67
Dutch		33.33
BMI (kg/m^2)		
Mean ± SD	32.76 ± 6.30	
Healthy weight (18 to <25)	2	3.03
Overweight (25.0 to <30)	14	21.21
Obesity class I (30.0 to <35)	17	25.76
Obesity class II (35.0 to <40)	9	13.64
Obesity class III (> 40)	6	9.09
NA	18	27.27

3.7. Pharmacists' opinion about the coaching

Despite recruitment difficulties and dropouts during the course of the study, pharmacists noted that patients were motivated, eager to learn about their condition and healthy behaviors and to achieve positive outcomes. Pharmacists therefore felt their usefulness in the project.

3.8. Patients' opinion about the use of the application

When asked about the application, patients found it and its content interesting and useful. However, some of them reported less interest in using the app, as they considered themselves already well informed about their condition.

3.9. Pharmacists' opinion about the use of the application

Some patients did not use the application regularly, so pharmacists sometimes had few dashboard parameters to discuss during interviews. They also noted technical problems as some videoconferences could not be implemented, so they deviated from the study protocol and used phone calls or even face-to-face interviews.

4. Discussion

Outcomes related to the medication adherence level, both A1c (mean of 6.49%) and MARS-5 score (mean of 24/25), were already good at baseline indicating that the patients were well-controlled with their diabetes. Moreover, a significant change in A1c in these patients could potentially have resulted in negative clinical consequences for them (hypoglycemic events) and would therefore not be desired. Even though A1c improved slightly to 6.21%, the medication adherence level was high from the beginning, so we can suppose that there may be a selection bias, recruiting mainly motivated participants. It would be interesting to study whether or not the intervention might be more beneficial and lead to significant improvements and subsequent positive health outcomes for less motivated patients.

Although only a few clinical parameters showed significant results, most of them showed a positive trend or remained stable throughout the study. As in other longer-term studies[23,24] a significant reduction in blood pressure values ($p = 0.01$) and waist circumference ($p = 0.002$) was observed. The mean systolic blood pressure of 135 mmHg at baseline decreased to a mean of 130 mmHg at T3. This value corresponds to the recommended systolic blood pressure threshold for patients with diabetes because it reduces cardiovascular complications.[25] Diastolic blood pressure decreased throughout the study from a mean of 81 mmHg to 78 mmHg. These values are below the recommended threshold (<85 mmHg) which also allows the reduction of cardiovascular complications.[25] Even though the improvement of waist circumference is statistically significant, both for male and female, regardless of gender, it cannot be considered as clinically relevant because the values at baseline and T6 were very high. Waist circumference values in excess of 80 and 94 cm, for women and men respectively, are associated with a moderate risk of metabolic complications, while values in excess of 88 and 102 cm are associated with a high risk.[26] In our sample, even though the average waist circumference has decreased significantly, it remains higher than recommended (average of 110.58 cm). In addition, BMI was also very high at baseline (average of 32.76 kg/m^2) as a BMI superior at 30 kg/m^2 is considered as obesity,[4] and the average weight did not decrease throughout the study. These high weights and BMIs are potentially life threatening, especially for individuals with diabetes, as they increase the risk of complications and mortality.[4]

Patient coaching by the pharmacist was a positive experience for both parties. Patients were satisfied by the coaching and interactions

Table 2
Clinical outcomes and their evolution at T0, T3 and T6.

Outcomes	T0 $n = 66$	T3 $n = 50$	T6 $n = 46$	Difference between T0 and T3 n = 50	*p*-value	Difference between T3 and T6 n = 46	p-value	Difference between T0 and T6 n = 46	p-value
A1c (%)	6.49 ± 1.32 6.2(5.7–6.9)	6.14 ± 0.68 6.25(5.68–6.6)	6.21 ± 0.83 6.15(5.73–6.6)	−0.13 ± 0.50 0.0(−0.2–0.1)	0.15**	0.05 ± 0.29 0.0(−0.1–0.1)	0.53**	−0.1 ± 0.54 0.0(−0.2–0.1)	0.37**
HDL-cholesterol[1] (mmol/l)	1.39 ± 0.45 1.33(1.06–1.67)	–	1.47 ± 0.49 1.43(1.13–1.78)	–	–	–	–	0.06 ± 0.24 0.05(0.01–0.18)	0.17*
LDL-cholesterol[2] (mmol/l)	2.01 ± 0.93 1.84(1.43–2.44)	–	1.99 ± 0.97 1.71(1.41–2.46)	–	–	–	–	−0.06 ± 0.36 −0.07 (−0.30–0.16)	0.35*
SBP (mmHg)	135.49 ± 15.05 135.0 (129.0–144.0)	130.38 ± 16.51 130.0 (120.0–141.0)	135.0 ± 18.92 135.0 (121.5–144.0)	−6.64 ± 15.56 −8.0 (−17.0–0.0)	0.01*	3.83 ± 15.0 3.0(−5.0–11.0)	0.11*	−2.48 ± 19.22 −3.0 (−15.0–8.50)	0.41*
DBP (mmHg)	81.86 ± 9.43 80.0(75.0–90.0)	78.34 ± 13.06 76.0(70.0–87.0)	79.6 ± 11.63 80.0(73.5–86.0)	−2.64 ± 12.15 −3.5 (−11.0–3.25)	0.20*	−0.03 ± 11.82 −1.0 (−6.0–8.0)	0.99*	−2.25 ± 11.39 −1.5 (−8.25–1.0)	0.07**
Weight (kg)	93.03 ± 20.58 91.50 (77.05–108.0)	94.50 ± 19.72 91.5 (78.95–108.8)	95.21 ± 19.44 90.0 (81.95–108.8)	−0.55 ± 2.46 −0.1 (−1.93–1.0)	0.14*	−0.75 ± 3.43 −0.5 (−2.0–1.4)	0.17*	−1.32 ± 3.86 −0.95 (−3.08–1.43)	0.05**
Waist circumference (cm)	111.14 ± 16.41 108.0 (99.0–118.5)	108.87 ± 14.60 110.0 (101.0–117.5)	110.58 ± 15.37 112.0 (102.88–118.0)	−2.06 ± 4.13 −1.0(−4.0–0.0)	0.002**	−0.5 ± 4.46 −0.5 (−3.0–2.0)	0.49*	−2.44 ± 4.92 −1.5 (−5.75–0.0)	0.01**

All variables are summarized as mean ± standard deviation and median and interquartile range (P25-P75).
* Student *t*-test.
** Wilcoxon signed ranks test.
[1] Measured only twice at T0 and T6.
[2] Measured only twice at T0 and T6.

with the pharmacist but divided on the use of digital technology. The majority of participants logged into the application at least once but 17% never logged on which may have partially biased the study. In addition, some patients were unable to get the video conferencing system to work. So it might be interesting to individualize the management (by adjusting the proportion of face-to-face versus remote sessions), especially according to the sensitivity and interest of each person with regard to the technologies. Pharmacists showed a real interest in coaching, both in terms of supporting the patients in the management of their disease and in terms of their professional development and sense of purpose. Given the workload inherent in the context of COVID-19 pandemic, pharmacists faced organizational difficulties and regretted not having had more time to devote to the study.

Further studies, conducted over a longer period of time, with a larger sample size, would be necessary to confirm or not the observed trends and possibly objectify significant results. Also, it would be appropriate to conduct studies with a control group to increase the level of evidence,[27] which was not possible in this project. Given the very good level of adherence at baseline, refining the sample inclusion criteria by targeting early-stage patients with less well-controlled diabetes. For example patients with an initial A1c level higher than or equal to 7%[9,28,29] or MARS-5 score $< 21/25$[21] might reveal more pronounced results. In addition, incorporating the concept of patient health literacy could lead to a study with the goal of tailoring the content of the app to each individual. Adherence is an important predictor of poorly controlled diabetes and is dependent on a number of patient and non-patient factors.[30] Therefore, it would also be interesting to carry out a qualitative study focused on patients and their needs by analyzing their level of health-literacy, behaviors and feelings. We could not distinguish what part of the results was the consequence of pharmaceutical follow-up and what part was related to the use of the mobile application. As mentioned before, some patients reported that they never logged on to the application and therefore only benefited from the pharmacist coaching during the study. Thus, it would be interesting to analyze and compare the results between these two groups, in order to see if there is a difference between the benefit of the combined intervention and the one without using the application, but also to analyze the profile of the patients who never logged in. Indeed, a possible link with age could raise the issue of the digital divide and require adaptations.[31] These different studies might propose a modular intervention adapted to the patient and his needs.

5. Limitations

This study has several limitations that must be taken into account when interpreting the results. Patients that were included in the study had a controlled A1c at baseline (mean of 6,49%), which makes finding clinically meaningful results more difficult. Future research should use A1c levels above the normal range as one of the inclusion criteria.

Scores on the MARS-5 questionnaire were quite high. This can be attributed to a social desirability bias, where patients want to present themselves in the most desirably light and want to please their health-care provider in confirming that they are adherent to the prescribed treatment. This is a known limitation of self-reported questionnaires. For this reason, multiple methods of assessing the adherence are necessary.

The use of the mobile application was quite limited in this study. Some of the patients never logged on to the application. Moreover, there was no data-collection on the patients' interaction with the mobile application (e.g. time spent on the app, pages viewed, links clicked, most popular features, etc.) Therefore, no conclusion can be drawn on the usefulness of the application in the management of type 2 diabetes.

Lastly, this study was a first scientific study for some of the pharmacists. Being in a patient-centric real-life setting and not being used to the rigorous methodology of scientific research, some deviations from protocol were observed (e.g. discussions or interviews that took place in the pharmacy rather than via the mobile application) when pharmacists prioritized patients preferences and pharmaceutical care services rather than data gathering.

6. Conclusion

This study evaluated a novel intervention involving both the educational skills of the pharmacist and the use of a mobile health application for type 2 diabetes patients. Several outcomes, considered as

clinical markers of improvement in the patient's overall health, were already very good at baseline, so a significant change would have been difficult to objectify. A positive trend in some outcomes (blood pressure and waist circumference notably) could indicate a positive effect of this intervention, but the study should be carried out over a longer period.

The majority of patients completed the entire study (70%) and noted their interest in and satisfaction with this project. All the pharmacists showed their interest in participating in this kind of project and their professional motivation despite a complicated context. Coaching by the pharmacist might be of interest for individuals with diabetes and help them with their health and disease management. Because of a lack of data on the use of the application, it was not possible to draw any conclusions about the impact of this part of the intervention.

The pharmacist, as a front-line health professional, certainly has a key role to play in therapeutic education by offering his chronic patients personalized and close care, based on the acquisition of knowledge and the development of skills. From this perspective, mobile health technologies could be additional tools supporting the pharmacist's intervention at a distance and helping patients to improve their self-management skills.

Despite some difficulties and limitations, this paper describes the first implementation of an intervention associating pharmacist counseling and the use of mobile health technology. Participants were motivated and the attrition rate was low, for both patients and pharmacists, opening up opportunities for further studies in the community pharmacy setting.

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Ethical approval

Ethical approval to conduct this investigation was granted by the Ethics Committee of the University of Liege (Belgium), reference number B7072021000018 dated 30 March 2021. Only participants who signed the information and consent document were eligible for participation in the study.

Declaration of Competing Interest

The authors declare that there is no conflict of interest.

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