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ORIGINAL RESEARCH

Preferences, Expectations and Attitudes on Basal Insulin from Patient–Physician–Payer Perspective: A Multi-stakeholder Survey by the Italian Diabetes Society (ITA4P Study)

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ABSTRACT

Introduction: Diabetes management often involves complex insulin regimens, posing significant challenges for patients and healthcare systems. Weekly basal insulin formulations aim to simplify treatment, reduce injection frequency, and improve adherence and quality of life. This study explored the beliefs, preferences and attitudes of patients, physicians and payers regarding current basal insulin therapy and weekly insulin formulations.

Methods: An online survey with structured questionnaires was developed for multiple stakeholders: patients with type 1 or type 2 diabetes, physicians and payers. Participants provided self-reported insights into basal insulin therapy and perceptions of weekly formulations. Results are presented in a descriptive non-analytical way.

Results: A total of 1094 patients, 468 physicians and 100 payers participated. Patients reported moderate satisfaction with current insulin therapy, with lower satisfaction in type 2 diabetes (T2D). The major burdens identified were daily injections and fear of hypoglycaemia, with weekly insulin seen as a promising alternative. Physicians prioritized glycaemic control goals, while patients emphasized independence and quality of life. Payers valued adherence and hypoglycaemia avoidance but raised concerns about costs and education needs.

Conclusions: According to this multi-stakeholder survey, weekly basal insulin offers a promising approach to reduce treatment burden and improve adherence and quality of life. Addressing concerns about safety, efficacy and cost will be critical to its successful adoption in clinical practice.

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Key Summary Points
Why carry out this study?
Managing diabetes with daily basal insulin is challenging as a result of complex regimens and patient burdens.
Here, we explored the beliefs, preferences and attitudes of patients, physicians and payers regarding current basal insulin therapy and weekly insulin formulations.
What was learned from the study?
Patients reported moderate satisfaction on current basal insulin, patients with type 2 diabetes feeling less satisfied and burdened by daily injections and fear of hypoglycaemia.
Physicians emphasized glycaemic control, while payers highlighted adherence and cost concerns, with weekly insulin seen as a promising alternative for many.
Weekly basal insulin could reduce treatment burdens, but addressing safety, efficacy and cost is essential for clinical adoption.

INTRODUCTION

Diabetes is a chronic and progressive condition requiring intensive management, often placing a significant burden on patients, healthcare systems and society. For affected individuals, this burden includes the complexity of treatment regimens, the frequency of injections and glucose monitoring, and the psychosocial challenges associated with maintaining disease control [1]. In type 2 diabetes (T2D), insulin therapy is a critical component for many patients to achieve optimal glycaemic targets [2], yet its initiation is often delayed as a result of multiple barriers [3, 4]. These include fear of injections, concerns about hypoglycaemia, weight gain, dosing freedom and the perception of insulin as a last resort [5]. Healthcare providers also face challenges, such as therapeutic inertia, patient resistance, and issues related to education and follow-up. Even after insulin initiation, glucose control often remains inadequate, in part because of lack of dose adjustment and dose omission, possibly leading to worsening of glucose control [6].

Weekly basal insulins represent a promising innovation that could alleviate many of these burdens by reducing the frequency of injections, simplifying treatment routines and potentially enhancing adherence and quality of life [7].

Icodec is a modified insulin conjugated with a C20 icosane fatty acid allowing strong and reversible binding to albumin from which it slowly dissociates, resulting in a half-life of 8.2 days [8]. In ONWARDS trials performed in insulin-naïve T2D, once weekly icodec was superior to once-daily glargine-100 and degludec with regards to glycaemic control, without a significant increase in hypoglycaemia risk [9–11]. Icodec is initiated at 70 IU / week (equal to 10 IU per day) and titrated ± 20 IU on a weekly basis. In people with T2D switching from insulin degludec, icodec more often achieved glycated haemoglobin (HbA1c) targets without severe or clinically significant hypoglycaemia and was preferred to insulin degludec [12–14]. In switching from other basal insulins, a single loading dose equal to 150% of the prior insulin dose is recommended. In people with type 1 diabetes (T1D) enrolled in ONWARDS-6, icodec met the primary non-inferiority HbA1c endpoint at 26 weeks versus degludec (but not at 52 weeks) and was associated with more hypoglycaemic episodes [15].

Efsitora is a single chain insulin bound to a IgG2 Fc domain forming a homodimer with a half-life of 17 days [16, 17]. Results of the QWINT trial program show non-inferiority of weekly efsitora versus daily degludec in T2D and T1D, but with significantly more hypoglycaemic events in T1D [18, 19].

Based on results for insulin icodec and efsitora, the adoption of these therapies requires a multifaceted understanding of their implications from the perspectives of all stakeholders involved in diabetes care, including patients,

physicians and payers. Exploring these perspectives is essential to address their unique needs and concerns, guide the implementation of innovative treatments and ultimately improve outcomes in diabetes management.

The overall objectives of this project were to examine patient, physician and payers' beliefs on insulin therapy, the degree to which patients adhere to their insulin regimens and the perceived benefits linked to the availability of new once weekly insulin formulations. We aimed to understand the different perspectives of an increased adherence to insulin therapy in terms of different outcomes, such as quality of life, cost and sustainability, treatment satisfaction and impact on caregivers. Ultimately, this is expected to provide evidence of the need for insulin regimens that are less restrictive and burdensome on the basis of patient, physician and payers' perspectives.

METHODS

The goal of this project was to gather information on basal insulin therapy from key stakeholders involved in diabetes care. The project was conceived by the scientific board of the Italian Diabetes Society, with non-binding support from Novo Nordisk. The scientific board met to discuss the thematic areas to focus on for data collection and agreed on a brief set of questions to be included in the survey. It was decided to develop three different short questionnaires (Supplementary Material) to explore the opinions on basal insulin therapy for patients with type 1 or type 2 diabetes, physicians involved in diabetes care and payers (including community pharmacists, hospital-based pharmacists, and individuals involved directly or indirectly in the provision, financing or reimbursement of medicines and/or their cost monitoring). The scientific board agreed to explore three main domains from the perspective of each stakeholder: preferences, expectations and attitudes. The process of building the survey followed these steps: (i) definition of objectives and variables; (ii) control of content validity through literature review and use of experts in the field; (iii) construction of the questionnaire with question drafting, formatting and scaling; (iv) content validation by expert review; (v) pilot test. However, as the survey questionnaire was developed for the limited purpose of this study, it was not formally validated for consistency, reliability, test–retest, statistical analysis and monitoring [20].

Participants were engaged through the following channels: flyers with QR codes distributed at diabetology clinics; visuals uploaded on multimedia totems at healthcare facilities; invitations through patient associations; website and patient community; emails from the scientific diabetology societies. Questionnaires were submitted to stakeholders through an online self-administered interview with a structured 15-min questionnaire that the user completed autonomously and anonymously. After a preliminary evaluation of basal insulin in general, participants were presented with a brief description of weekly insulin, based on icodec, as follows: "A new basal insulin, which could soon be available, would be administered once a week rather than daily. With this new insulin, a single injection would deliver the insulin units for the entire week (e.g., 10 units per day = 70 units per week)". The description of icodec was chosen in place of that for efsitora because icodec has received approval by the European Medicines Agency (EMA) for both T1D and T2D [19], whereas efsitora is still being investigated in the phase 3 trial program.

With regards to demographics and diabetes-related data, there was no control over data input, as such information was self-reported by participants and not extracted from health records. The activity complied with the principles of the Declaration of Helsinki and was performed outside of the National Healthcare System (NHS) and no NHS data or resources were used. Participants provided digital informed consent to the use of data collected anonymously during the questionnaire-based interview for the scope of this project. On the basis of these premises, considering this was not a clinical trial or a clinical study, according the national and European regulations on data protection, need for an ethical approval was waived.

Data are herein presented in an aggregate and descriptive form. In quantitative scales (0–5 or

0–10), higher scores indicated greater agreement or a more positive response. Descriptive statistics of the respondents are presented as mean (standard deviation) or as percentage for continuous and categorical variables, respectively. The summary statistics was reported as the mean values of the response scores. Because of the descriptive nature of the study, there was no formal statistical comparison within groups or between groups.

RESULTS

Patients' Perspectives

A total of 1094 patients responded, including 560 with T1D and 490 with T2D, 253 of whom were on insulin therapy (49% basal; 48% basal-bolus; 3% bolus insulin only). Participants with T1D were 53% female, with a mean age of 48 years and a mean diabetes duration of 23.7 years. Participants with T2D on insulin therapy were 37% female, with a mean age of 68 years, and a mean diabetes duration of 18.9 years. Participants with T2D not using insulin were 41% female, with a mean age of 65 years, and a mean diabetes duration of 11.5 years (Table 1).

The overall satisfaction with the current insulin therapy was lower for T2D (6.3/10) than for T1D (6.9/10), particularly for basal insulin (6.2/10 vs 7.5/10 in T2D vs T1D; Fig. 1a). Fear of hypoglycaemia was the major concern related to the initiation of insulin therapy in both T1D and T2D, followed by loss of independence and freedom (Fig. 1b). In all subgroups of participants, the ability to reduce the risk of chronic complications was considered the most important factor defining the success of insulin therapy, followed by achieving a good glycaemic control (Fig. 1c). Maintaining professional and personal freedom without therapy limitations was considered more important for insulin-experienced participants, i.e. T1D (8.7/10) and insulin-treated T2D (8.0/10), than for non-insulin-treated T2D (7.7/10).

The need for daily administration (Fig. 1d) was considered the major disadvantage of the current basal insulin regimens in all subgroups, scoring higher for non-insulin-treated T2D (8.1/10), followed by the risk of hypoglycaemia (non-insulin-treated T2D), the requirement for frequent blood glucose monitoring (insulin-treated T2D) and uncertainty about management during acute illness (T1D).

After participants were presented with a brief description of the weekly basal insulin icodec, among the three patient groups, the willingness to use was numerically higher for insulin-treated T2D (8.6/10) and lower for non-insulin-treated T2D (7.2/10; Fig. 1e). In all subgroups the major perceived benefits were the reduction in the number of injections and the possibility to forget about insulin administration for 6 days a week. On the other hand, the major concerns were risk of hypoglycaemia and the need to administer a large insulin dose in a single injection. Uncertainty about management during physical activity drove the lowest concern in T2D (Fig. 1f).

Physicians' Perspectives

Among 468 respondents (51% female), mean age was 54 years, and the primary specialty was

Table 1 Characteristics of survey participants

Variable	Type 1 diabetes	Insulin-treated type 2 diabetes	Non-insulin-treated type 2 diabetes	Physicians	Payers
Age, years	48.3 (16.4)	68.0 (11.2)	65.3 (10.1)	54.0 (14.4)	55.8 (10.3)
Sex female, %	52.7	36.7	40.9	50.8	56
Diabetes duration, years	23.7 (16.4)	18.9 (10.3)	11.5 (9.4)	–	–

Continuous variables are presented as mean (standard deviation)

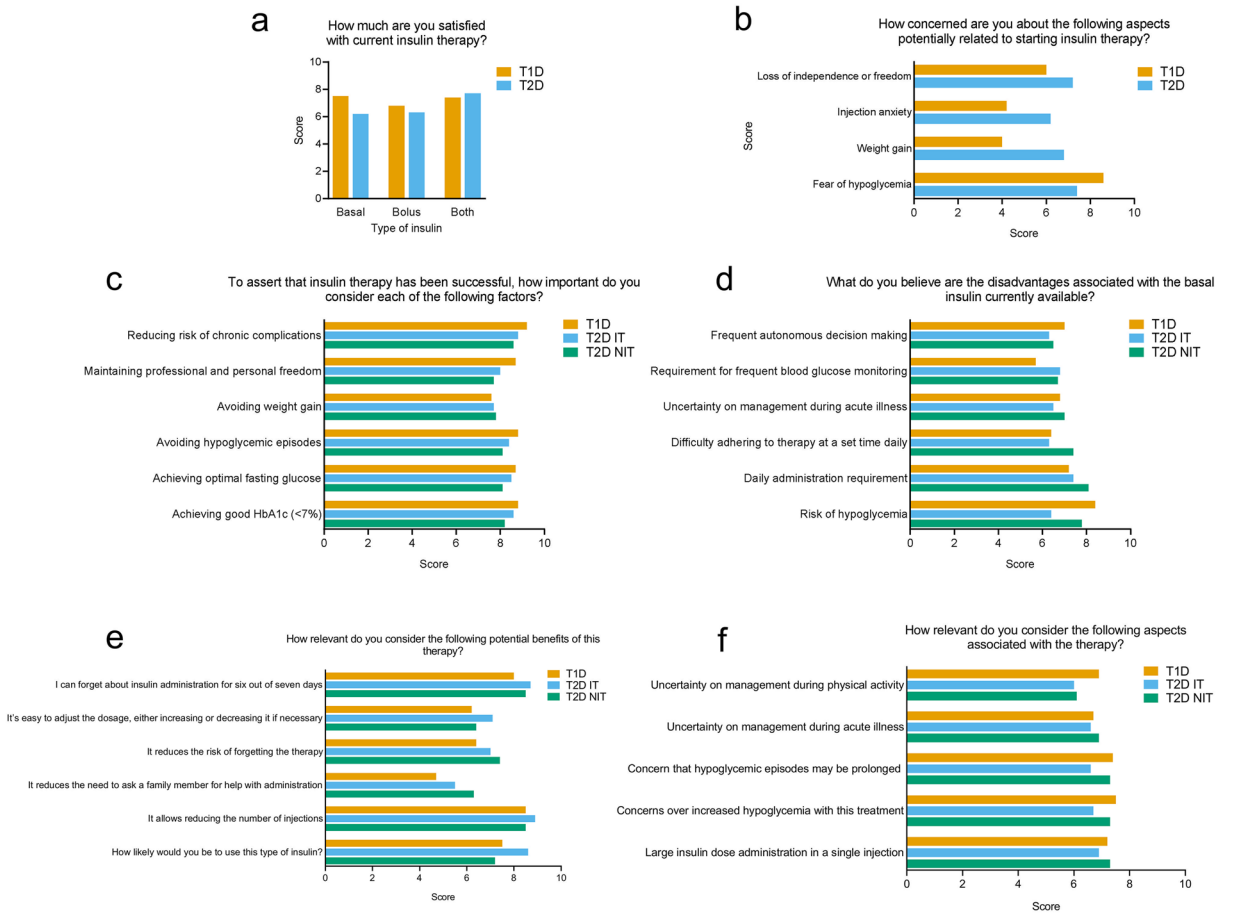


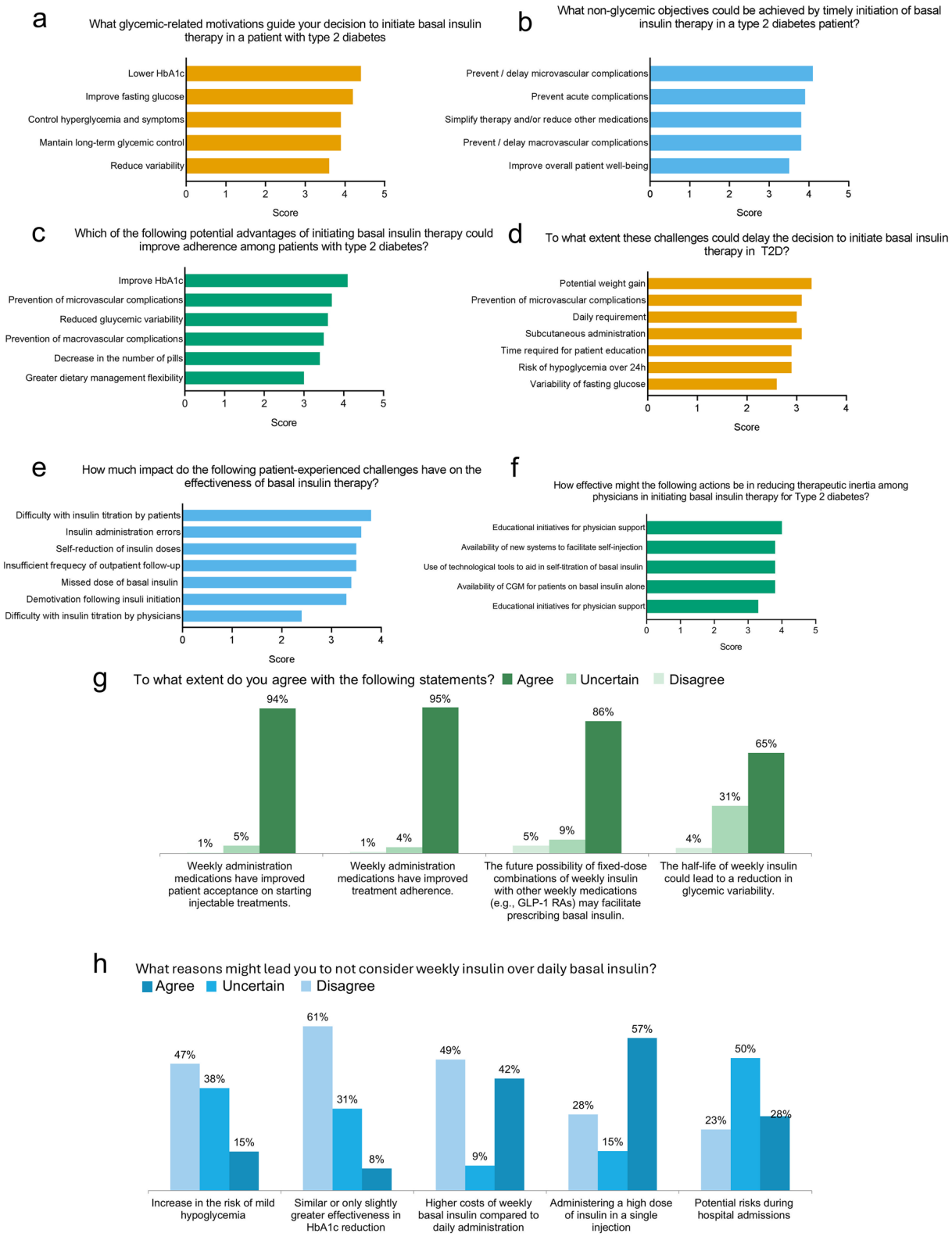
Fig. 1 Patient perspectives. **a** Insulin satisfaction. **b** Concerns about starting insulin. **c** Success of insulin therapy. **d** Disadvantages of current basal insulins. **e** Benefits of weekly basal insulin. **f** Relevance of weekly basal insulin aspects. *T1D* type 1 diabetes, *T2D* type 2 diabetes, *IT* insulin-treated, *NIT* non-insulin treated, *HbA1c* glycated haemoglobin

endocrinology (49%), diabetology (31%) or internal medicine (16%) for most of them. The majority worked in a hospital diabetes service (44%) or a diabetes clinic (30%; Table 1).

The main glycaemia-related reasons for starting basal insulin in T2D (Fig. 2a) were the need to lower HbA1c (4.4/5) and improve fasting glucose (4.2/5), whereas reducing glycaemic variability was considered less important (3.6/5). Among the non-glycaemic objectives that could be pursued by timely initiation of basal insulin in T2D (Fig. 2b), to prevent or delay microvascular complications ranked first (4.1/5), whereas improving overall patient well-being/quality of life ranked last (3.5/5). There was good agreement that better control of HbA1c could improve adherence to basal insulin in people with T2D (4.1/5), while greater flexibility in dietary management scored low (3/5; Fig. 2c).

The most important challenges that could delay the physicians' decision to initiate basal insulin were (Fig. 2d) potential for weight gain (3.3/5), the need for injections (3.1/5), the daily requirement (3/5) and the risk of nocturnal hypoglycaemia (3/5).

According to physicians, the high-ranking patient-experienced challenges that affect the effectiveness of basal insulin therapy were (Fig. 2e) difficulty with insulin titration by the patient (3.8/5), insulin administration errors (3.6), patient self-reduction of insulin doses


a
What glycemic-related motivations guide your decision to initiate basal insulin therapy in a patient with type 2 diabetes
Lower HbA1c
Improve fasting glucose
Control hyperglycemia and symptoms
Mantain long-term glycemic control
Reduce variability
0 1 2 3 4 5
Score
b
What non-glycemic objectives could be achieved by timely initiation of basal insulin therapy in a type 2 diabetes patient?
Prevent / delay microvascular complications
Prevent acute complications
Simplify therapy and/or reduce other medications
Prevent / delay macrovascular complications
Improve overall patient well-being
0 1 2 3 4 5
Score
c
Which of the following potential advantages of initiating basal insulin therapy could improve adherence among patients with type 2 diabetes?
Improve HbA1c
Prevention of microvascular complications
Reduced gluycemic variability
Prevention of macrovascular complications
Decrease in the number of pills
Greater dietary management flexibility
0 1 2 3 4 5
Score
d
To what extent these challenges could delay the decision to initiate basal insulin therapy in T2D?
Potential weight gain
Prevention of microvascular complications
Daily requirement
Subcutaneous administration
Time required for patient education
Risk of hypoglycemia over 24h
Variability of fasting glucose
0 1 2 3 4
Score
e
How much impact do the following patient-experienced challenges have on the effectiveness of basal insulin therapy?
Difficulty with insulin titration by patients
Insulin administration errors
Self-reduction of insulin doses
Insufficient frequecy of outpatient follow-up
Missed dose of basal insulin
Demotivation following insuli initiation
Difficulty with insulin titration by physicians
0 1 2 3 4
Score
f
How effective might the following actions be in reducing therapeutic inertia among physicians in initiating basal insulin therapy for Type 2 diabetes?
Educational initiatives for physician support
Availability of new systems to facilitate self-injection
Use of technological tools to aid in self-titration of basal insulin
Availability of CGM for patients on basal insulin alone
Educational initiatives for physician support
0 1 2 3 4 5
Score
g
To what extent do you agree with the following statements?
Agree
Uncertain
Disagree
1% 5% 94%
Weekly administration medications have improved patient acceptance on starting injectable treatments.
1% 4% 95%
Weekly administration medications have improved treatment adherence.
5% 9% 86%
The future possibility of fixed-dose combinations of weekly insulin with other weekly medications (e.g., GLP-1 RAs) may facilitate prescribing basal insulin.
4% 31% 65%
The half-life of weekly insulin could lead to a reduction in glycemic variability.
h
What reasons might lead you to not consider weekly insulin over daily basal insulin?
Agree
Uncertain
Disagree
47% 38% 15%
Increase in the risk of mild hypoglycemia
61% 31% 8%
Similar or only slightly greater effectiveness in HbA1c reduction
49% 9% 42%
Higher costs of weekly basal insulin compared to daily administration
28% 15% 57%
Administering a high dose of insulin in a single injection
23% 50% 28%
Potential risks during hospital admissions

◂**Fig. 2** Physicians' perspectives. **a** Drivers of the decision to initiate basal insulin. **b** Non-glycaemic objectives of basal insulin. **c** Ways to increase adherence to insulin. **d** Challenges that delay insulin initiation. **e** Impact of patient-experienced challenges. **f** Actions to reduce inertia. **g** Statement agreement on weekly basal insulin. *T2D* type 2 diabetes, *CGM* continuous glucose monitoring, *GLP-1 RAs* glucagon-like peptide 1 receptor agonists, *HbA1c* glycated haemoglobin

(3.5/5) and insufficient frequency of outpatient visits (3.5/5).

Educational initiatives for patient support were considered the most important actions to reduce therapeutic inertia (4/5), though other factors ranked similar (3.8/4), including availability of continuous glucose monitoring (CGM) for patients on basal insulin alone, use of technological tools to aid in self-titration of basal insulin, and availability of new systems to facilitate self-injection and reduce injection site pain/discomfort and complications (Fig. 2f).

Physicians reported a very high degree of agreement on statements that the weekly regimens will improved patients' acceptance of injectable medications and adherence (Fig. 2g). As potential reasons not to consider the weekly basal insulin for their patients, physicians were concerned about administering a high dose of insulin in a single injection, higher costs, and risks during hospital admissions (Fig. 2h).

Finally, expectations around the weekly basal insulin were explored and high levels of agreement were reached on improvement in patient quality of life and adherence, reduction in injection site complications, and increased flexibility of self-administration timing. On the other hand, there was uncertainty about the possibility that weekly basal insulin exerts greater efficacy in HbA1c reduction, similar or lower hypoglycaemia risk, reduced glycaemic variability and less weight gain than daily basal insulins (Fig. 3).

Payers' Perspectives

The 100 respondents for the payer's perspective questionnaires included 48 pharmacists and other types of payers, well distributed across the country (36% north; 22% centre; 42% south). Mean age was 56 years and 56% were female (Table 1).

In general, improvement in HbA1c was considered the most important aspect of basal insulin use (4.2/5), but avoidance of hypoglycaemia and reduction in the number of injections were considered equally important (4/5), whereas the control of fasting glucose and glycaemic variability scored lower (Fig. 4a).

With regards to the benefits of weekly basal insulin, payers ranked highest the improvement in quality of life and adherence (both 4.2/5), followed by the reduction in chronic (4.1/5) and acute (4/5) complications. On the other hand, the improvement in other glucose metrics had lower ranking (Fig. 4b).

All proposed features of weekly basal insulin were considered important (Fig. 4c), with quality of life improvement scoring highest, followed by significant reduction in the number of injections, improvement in glycaemic control and reduced environmental impact. On the other hand, the fear of hypoglycaemic episodes was considered the major barrier to the use of weekly basal insulin, followed by aspects concerning patient or caregiver education and cost (Fig. 4d). With regards to cost, the improvement in quality of life and adherence to therapy scored highest as the benefits of weekly insulin that would justify greater costs compared to daily insulin (Fig. 4e).

DISCUSSION

This study provides valuable insights into the perspectives of patients, physicians and payers regarding basal insulin therapy and the introduction of weekly basal insulins. The results underscore the distinct and overlapping priorities and concerns among key stakeholders, highlighting opportunities for advancing diabetes care. This agrees with prior experience showing that an inclusive, stakeholder-engaged approach ensures that diverse perspectives are integrated to compare strategies for diabetes management [21].

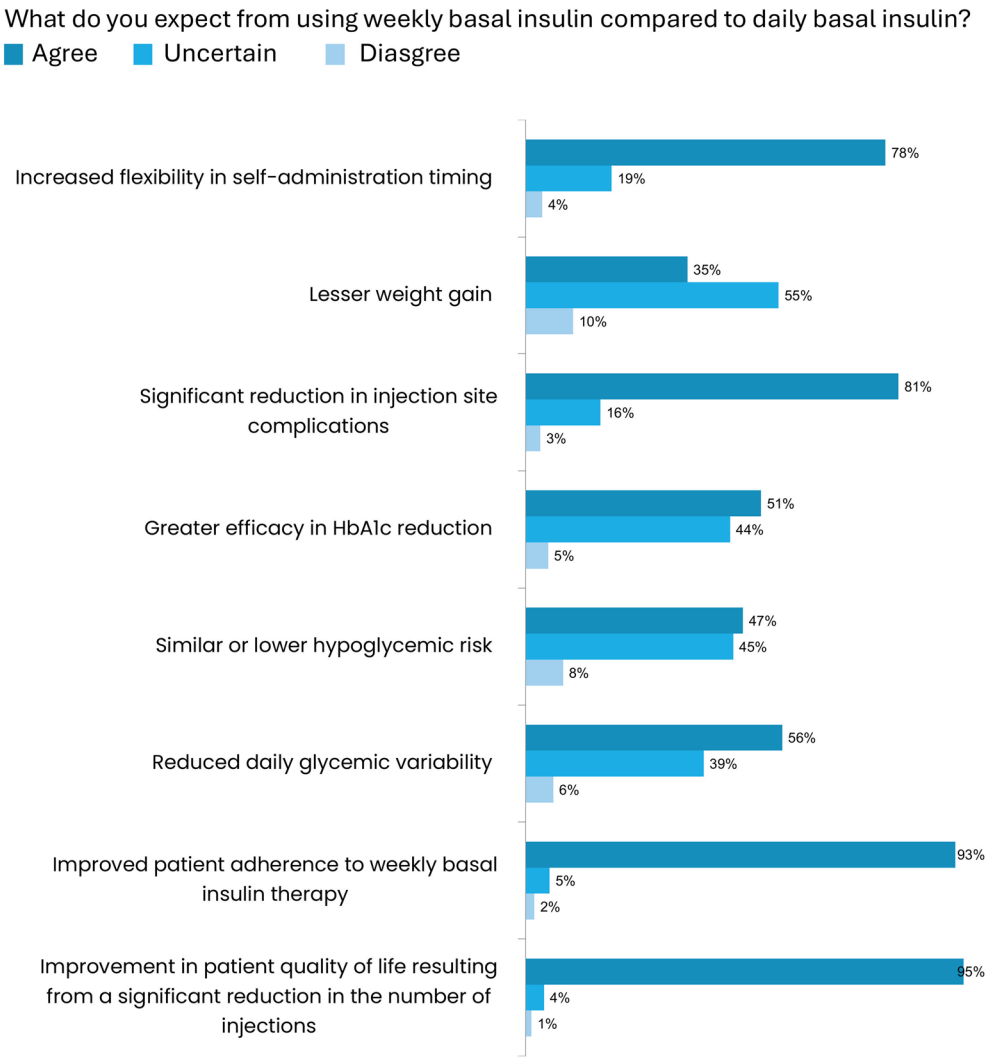


Fig. 3 Physicians' expectations from weekly basal insulin

Notably, patients' satisfaction with current basal insulin regimens was modest, with lower satisfaction observed among those with T2D compared to T1D. This difference is not backed by literature data: in a real-world study evaluating the switch to degludec, the baseline satisfaction with regards to their prior basal insulin regimen was similar between participants with T1D and T2D [22]. The discrepancy may be partially explained by differences in age, diabetes duration and treatment experience, as older individuals with longer disease duration, typical of T2D populations, may encounter more challenges in self-management. As demonstrated before in an observational Italian study [23], fear of hypoglycaemia remains as a dominant concern for both T1D and T2D, indicating the need for therapies that minimize this risk while maintaining efficacy. Interestingly, the reduction in injection frequency offered by weekly basal insulin was a highly valued benefit [24], particularly among insulin-treated patients with T2D, likely because they have experienced the burden of insulin therapy on top of a non-insulin regimen. The evolution of glucagon-like peptide 1 receptor agonist (GLP-1RA) therapy has already offered an opportunity to appreciate patients' preferences for once-weekly oral

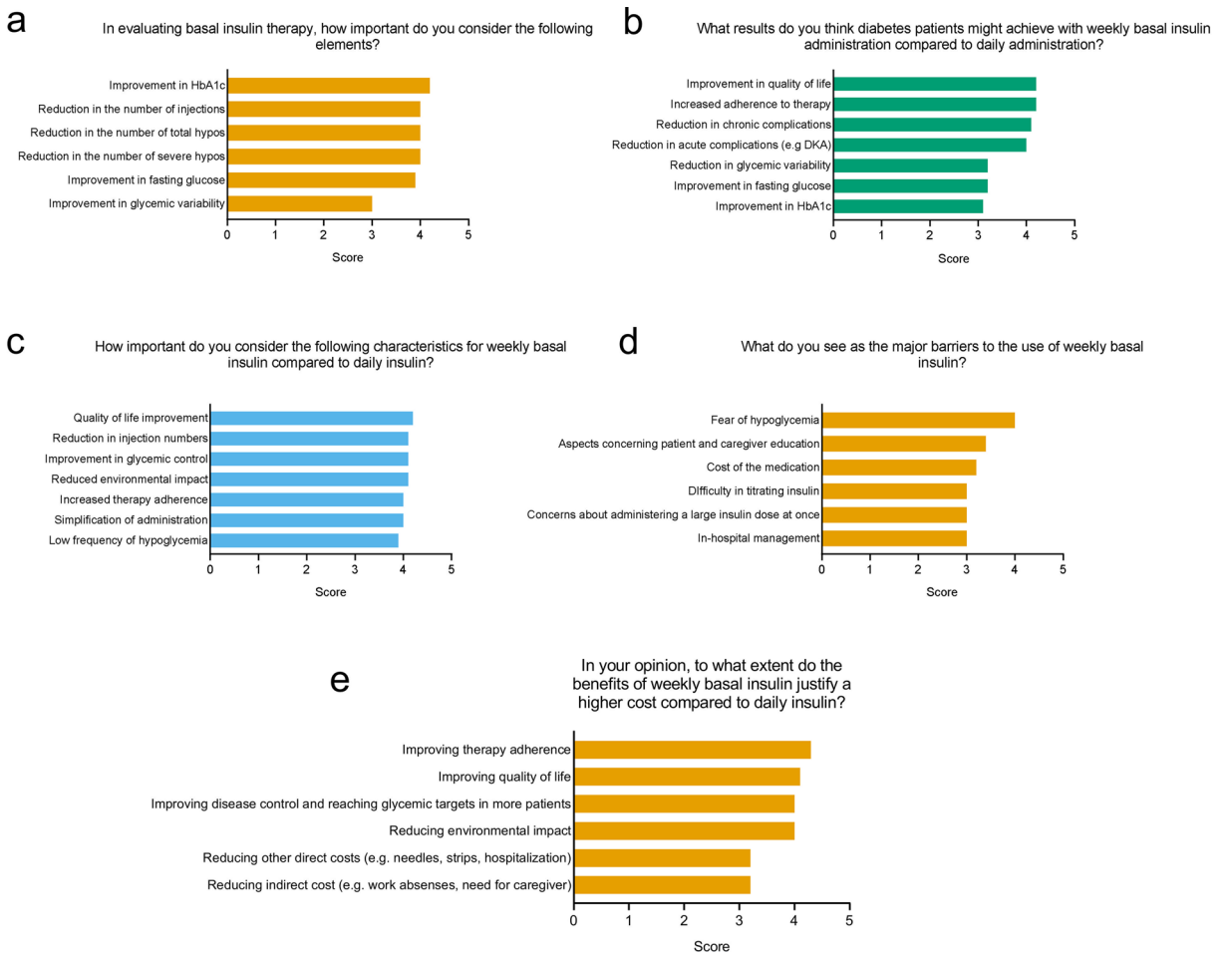


Fig. 4 Payers' perspectives. **a** Elements to evaluate insulin therapy. **b** Results achievable with weekly insulin therapy. **c** Importance of weekly basal insulin characteristics. **d** Barriers to the use of weekly basal insulin. **e** Benefits to justify higher cost. *HbA1c* glycated haemoglobin, *DKA* diabetic ketoacidosis

versus once-daily injectable medications [25]. In the case of insulin, however, concerns about the single administration of a high number of units and about hypoglycaemia risk highlight the importance of comprehensive patient education and support for transitioning to such new basal insulin. There was a clear patient focus on independence and maintaining personal and professional freedom, suggesting that the adoption of weekly insulin is expected by patients to improve quality of life, particularly for insulin-experienced individuals.

From the physician standpoint, initiating basal insulin therapy in T2D was strongly driven by glycaemic control goals. Non-glycaemic benefits such as preventing microvascular complications were also valued, while improving patient quality of life ranked lower. Such a low prioritization of improving patients' quality of life as a driver of basal insulin initiation was observed, striking when viewed in the context of the American Diabetes Association/European Association for the Study of Diabetes (ADA/EASD) consensus document, which emphasizes a patient-centred approach to holistic diabetes management [26]. The consensus advocates for treatment strategies that not only achieve glycaemic targets but also consider patient preferences, psychosocial well-being and quality of life. This divergence between guidelines and physician priorities may reflect the emphasis on metrics of treatment success relying on

measurable targets for assessing glycaemic efficacy. However, this approach may inadvertently overlook the importance of factors related to quality of life, such as reduced treatment burden, flexibility in self-management and minimizing hypoglycaemia-related anxiety, which are highly valued by patients [27]. The existence of a discrepancy between patients and physicians in the evaluation of general and diabetes-related quality of life was reported before [28]. Here, we extend that concept to the priorities in evaluating new diabetes medications. These discrepancies highlight the need for increased awareness and training among healthcare providers to integrate quality of life considerations into decision-making, in line with the recommendations by scientific societies.

Challenges perceived by physicians, including concerns about weight gain, hypoglycaemia and the daily injection burden, aligned with patient-reported barriers. However, the importance placed on educational initiatives and technological tools to support patients underscores a recognition of the psychosocial and practical aspects influencing adherence. The enthusiasm for weekly basal insulin was also especially related to its potential to improve adherence and reduce injection-related issues. On the other hand, some uncertainty regarding clinical efficacy, hypoglycaemia risk and cost-effectiveness underscores the need for robust evidence in support of its implementation in clinical practice.

Payers prioritized HbA1c improvement and hypoglycaemia avoidance as major goals of basal insulin therapy, but also recognized the significance of reducing injection frequency and enhancing quality of life. This broader view, including the environmental impact of fewer injections, reflects an alignment with healthcare sustainability goals. However, concerns about cost and the need for patient education indicate that while payers acknowledge the potential benefits of weekly basal insulin, these must be balanced against economic and practical challenges. Cost-justification analysis should therefore emphasize quality of life improvements and adherence gains as central to the value proposition of weekly insulin. Simulations for cost–utility analysis have been performed for the treatment of patients with T2D in China, leading to the estimation of reasonable cost ranges for icodec, when compared to glargine or degludec [23, 29]. Furthermore, a multi-country analysis of injectable therapies for obesity and T2D has estimated the disutility associated with once-daily versus once-weekly administration [30]. It is noteworthy that a recent economic evaluation from the Italian NHS perspective revealed that once-weekly icodec, at an annual cost 25% higher than degludec, grants no incremental cost and even potential savings per patient, considering the economic benefits generated by the needle use reduction and adherence improvement [31].

Upon a qualitative comparison of the reports from the different survey respondents, we note a considerable convergence in the recognition of hypoglycaemia avoidance, adherence improvement and quality of life as critical factors across stakeholders. However, divergence exists in the prioritization of such objectives, with physicians and payers focusing on clinical and economic outcomes, while patients emphasize independence and convenience. This divergence emphasizes the need for a multidimensional approach to introducing weekly basal insulin, addressing not only clinical and cost concerns but also patient-centred outcomes.

These considerations have implications for the adoption of weekly basal insulin in clinical practice. Indeed, the willingness of patients and physicians to consider weekly basal insulin is encouraging, but its success will depend on addressing some outstanding concerns that have emerged in the literature [32] and in our survey. First, education and support programs will need to address patient and physician concerns about single high-dose administration and hypoglycaemia risk in various situations. Second, the generation of robust real-world evidence would complement data from trials in the efficacy, safety and cost-effectiveness relative of weekly basal insulin compared to daily insulin in the free-living conditions of routine care. Finally, it will be important to collaborate with payers to develop pricing strategies that reflect the broader benefits of weekly basal insulin, incorporating patient-centred aspects such as reduced injection burden and improved adherence.

In view of these differences in stakeholder perspectives, it should be noted that the slower implementation of new treatment options often stems from the need to gather sufficient real-world evidence addressing these multifaceted considerations. For instance, even if a new treatment offers a clear advantage in one domain (such as convenience), concerns about potential risks, long-term outcomes, or cost-effectiveness may slow its adoption. This multidimensional decision-making process has an inherent trade-off that stakeholders must consider before integrating weekly basal insulin into routine practice. Additionally, we wish to emphasize the need for further evidence and education to ensure that the benefits of reduced injection burden do not come at the expense of other critical treatment goals.

We wish to acknowledge limitations of this study. This report relied on self-reported data, which may introduce biases, particularly regarding demographic and clinical characteristics. The lack of NHS data integration and reliance on an online survey format may limit generalizability. A similar concern may arise from the fact that most physicians were recruited in the hospital setting or a diabetes clinic, rather than in a primary care context. Regarding the interpretation of payers' responses, it should be underlined that we do not have evidence that all respondents had a direct or indirect decision-making role in financing or reimbursing medicines, but some of them could only be involved in the supply of drugs and/or in monitoring costs. Furthermore, the questionnaire was not validated with a standard methodology, implying that its internal and external validity have to be considered critically. The use of a limited set of survey questions, somewhat arbitrarily selected by the board, represents an inherent limitation of the methodology. While the focused approach allowed for concise and efficient data collection across multiple stakeholders, it may have constrained the depth and breadth of insights obtained. Specifically, the choice of questions may reflect the perspectives and priorities of the board rather than being informed by a broader consensus or validated frameworks. This limitation raises the possibility of omitted areas that could have provided valuable context or alternative viewpoints, such as psychosocial dimensions, cultural considerations, or barriers unique to underrepresented groups. The lack of open-ended questions restricted participants' ability to freely elaborate on their experiences, potentially limiting the richness of the data. Future endeavours should focus on physicians from other specialities as well as on general practitioners, to provide a more comprehensive view of physicians' perspectives on weekly insulin treatment.

The major strength of the study is its multistakeholder perspective, providing a comprehensive view of basal insulin therapy and the potential impact of weekly basal insulin from diverse but interconnected perspectives. Sample size was large, allowing one to address different populations of patients, physicians with different specialties and payers with different backgrounds. The use of structured questionnaires with quantitative scales ensures consistency and facilitates the aggregation of data across stakeholder groups.

CONCLUSION

This survey highlights the perceived benefits, risks and unmet needs of daily basal insulin therapy, and provides novel data on the expectations about the use of a weekly basal insulin, which stands as a promising advancement in diabetes management, with the potential to address several of the identified unmet needs, particularly in reducing the burden of daily injections and improving quality of life. Successful adoption will require educational and communication strategies addressing remaining concerns about safety, efficacy and cost while leveraging its perceived benefits to align stakeholder priorities.

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Data Availability. The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request, but restrictions may apply due to compliance with data protection.

Declarations

Conflict of Interest. Gian Paolo Fadini received honoraria for lectures, consultancy or advisory board from Abbott, AstraZeneca, Boehringer, Guidotti, Lilly, Mundipharma, Novartis, Novo Nordisk, Sanofi, Servier, Takeda. Stefano Ciardullo received honoraria for lectures from AstraZeneca, Boehringer Ingelheim, Guidotti, Eli Lilly, Novo Nordisk, MSD. Gianluca Perseghin received honoraria for lectures: AstraZeneca, Bayer, Boheringer Ingelheim, Daiichi Sankyo, Echosens, Lilly, Menarini Diag, Merck, Novo Nordisk, Pfizer, PikDare; received honoraria for advisory bord: Amgen, Bruno Farmaceutici, EG, Lilly, Merck, Novartis, Novo Nordisk, Pfizer, PikDare. Ernesto Maddaloni reports consulting fees, payment or honoraria for lectures, presentations or advisory boards from Abbott, AstraZeneca, Eli Lilly, MSD, MTD, NovoNordisk, PikDare. Raffaella Buzzetti reports research grants from AstraZeneca and speaker/consultancy fees from Eli Lilly, Sanofi, Abbott, Vertex, NovoNordisk, Boehringer Ingheleim, AstraZeneca, Mundipharma, and Guidotti. Angelo Avogaro received honoraria for lectures, consultancy or advisory board from AstraZeneca, Boehringer, Guidotti, Lilly, Novo Nordisk, Sanofi, Servier, Menarini. Carla Giordano and Mariangela Ghiani have nothing to declare. Gian Paolo Fadini is an Editorial Board member of *Diabetes Therapy*. Gian Paolo Fadini was not involved in the selection of peer reviewers for the manuscript nor any of the subsequent editorial decisions.

Ethical Approval. The activity complied with the principles of the Declaration of Helsinki and was performed outside of the National Healthcare System (NHS) and no NHS data or resources were used. Participants provided digital informed consent to the use of data collected anonymously during the questionnaire-based interview for the scope of this project. On the basis of these premises, considering this was not a clinical trial or a clinical study, according the national and European regulations on data protection, need for an ethical approval was waived.

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