

Fear of injections among people with type 2 diabetes: Overview of the problem

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Fear of injections is common in people with type 2 diabetes requiring insulin therapy. It is associated with poor adherence to therapy and poor glycaemic control, which places people at a higher risk of both acute and chronic complications of type 2 diabetes. However, despite awareness of the problem, limited evidence on fear of injections, especially regarding strategies to manage this issue, is available. This review explores the currently available literature on fear of injections in people with type 2 diabetes. The findings are presented according to a thematic/integrative framework consisting of five themes: (1) barriers to insulin therapy; (2) the prevalence of fear of injections; (3) factors related to fear of injections; (4) the effects of fear of injections on diabetes self-management and clinical outcomes; and (5) recommended strategies to manage fear of injections.

Diabetes has become a serious threat to global health, and both developed and developing countries are facing the burden of this condition. Currently, based on data gathered by the International Diabetes Federation (2015), 415 million adults have diabetes globally, and another 318 million have impaired glucose tolerance, which places them at a higher risk of developing diabetes in the future. Type 2 diabetes accounts for 90% of global diabetes prevalence, and is caused mostly by excess body weight and physical inactivity.

In the UKPDS (UK Prospective Diabetes Study), it was concluded that early and intensive insulin therapy, in conjunction with oral antidiabetes therapy, was most likely to promote good glycaemic control and prevent long-term vascular and neurological complications in people with type 2 diabetes (Vinik, 2007). However, there are several psychological issues that may affect a person's uptake of and adherence to insulin therapy, one of which is fear of injections (Brod et al, 2009). Fear

of injections is correlated with poor adherence to insulin therapy and inadequate glycaemic control (Stotland, 2006). As a consequence, people with a fear of injections tend to have a higher risk of developing microvascular and macrovascular complications (Davis and Renda, 2006).

Until recently, little attention has been given to fear of injections, and there are few publications concerning this issue. This review was conducted to explore the currently available literature on fear of injections in people with type 2 diabetes.

Literature search and selection process

The literature was obtained through electronic sources from a number of digital research databases, including ProQuest, Ovid, CINAHL and Scopus. The keywords used were psychological insulin resistance, injection anxiety, fear of injection, type 2 diabetes and diabetes education. The articles searched were limited to those published between 2003 and 2016 to ensure that the sources were up-to-date and relevant to the current situation. In

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Article points

1. Fear of injections is common in people with type 1 diabetes and can be a barrier to initiating or adhering to insulin therapy.
2. The fear typically results from poor knowledge of the injection procedure and of the effects and side effects of insulin therapy.
3. Healthcare professionals should raise the possibility of the potential future need for insulin therapy early in the course of type 2 diabetes and work with their patients to address barriers to injectable therapies.

Key words

- Fear of injections
- Insulin
- Psychology
- Type 2 diabetes

Authors

Author details can be found at the end of the article.

Page points

1. People with type 2 diabetes face a number of financial and psychological barriers to initiating insulin therapy, including fear of injections.
2. The reported prevalence of fear of injections in people requiring insulin therapy ranges from 10% to >50% and tends to be greater in women.
3. Fear of injections is influenced by a person's own experience and interactions with significant others and healthcare professionals.

In addition, the literature search used the ancestry approach, in which the reference lists of articles are used to search for previous studies that are relevant to the topic under consideration (Polit and Beck, 2012). All of the obtained literature was appraised using the Critical Appraisal Skills Programme (CASP) tool (CASP UK, 2013). Recent guidelines on injections and the latest publications from leading organisations in health and diabetes were also included to increase the depth and breadth of the discussion.

The findings are presented according to a thematic/integrative framework. Five themes emerged:

- Barriers to insulin therapy.
- The prevalence of fear of injections.
- Factors related to fear of injections.
- The effects of fear of injections on diabetes self-management and clinical outcomes.
- Recommended strategies to manage fear of injections.

Barriers to insulin therapy

Concerns about patients' knowledge, financial issues and convenience have become a general theme in terms of barriers to medication adherence. Psychological and financial factors were the two major types of barrier identified to affect adherence to insulin therapy. The psychological barriers are mainly concerned with inappropriate perceptions about insulin therapy, including its benefits, side effects, indications and contraindications, and how it affects daily activities. Financial barriers generally relate to the cost of insulin therapy and accessibility issues in obtaining insulin therapy supplies.

From its initiation, insulin therapy is not an easy task for many people. In a survey conducted by Polonsky et al (2005), almost 30% of the participants stated they did not want to start insulin therapy. This reluctance was more common in women, and the perceived permanence of insulin therapy, its restrictiveness, side effects, the sense of personal failure and low self-efficacy were the leading reasons why insulin was refused. A study conducted by Funnell (2007) on patients' perceived barriers to insulin therapy revealed that the respondents believed insulin may cause hypoglycaemia and weight gain, elicit a sense of personal failure and cause complications or even death.

The cost of the medication was also identified as a significant barrier (Peyrot et al, 2012). To be specific, medication cost has become a genuine threat to wellbeing, especially in low-socioeconomic-status communities.

Prevalence of fear of injections

The prevalence of fear of injections in people taking insulin ranges from 10% to 26% (Rubin et al, 2009), and women tend to have higher levels of fear and anxiety than men (Zambanini et al, 1999; Nam et al, 2010). A survey conducted on behalf of the American Association of Diabetes Educators revealed that no less than a third of participants with type 2 diabetes requiring insulin experienced dread related to the injections (Harris Interactive, 2008). Similarly, Stotland (2006) found that 45% of participants avoided injections because of fear, anxiety and phobia.

Further analysis revealed that fears associated with injections contributed to 24% of insulin reluctance (Brod et al, 2009). A literature review by Peragallo-Dittko (2007) revealed an even greater incidence of fear of injections, with more than 50% of participants expressing a fear of injections and thus refusing to commit to insulin therapy.

These statistics indicate the degree of resistance to insulin injections among people with type 2 diabetes, both those who are already taking insulin and those who have not yet begun the therapy. It is suggested that fear of injections is common and a real problem for these people. Diabetes educators are encouraged to identify the possibility of fear of injections among their patients as early as possible.

Factors related to fear of injections

Many factors have been identified that are correlated with fear of injections. These factors stem from two main issues: past experience and insufficient knowledge (Table 1).

From a general perspective, the attitude of the person with type 2 diabetes towards insulin therapy could be influenced by their past experience and is mostly related to their experience and interactions with healthcare professionals, and to discussion with significant others such as parents, spouses and other family members (Brod et al, 2009). Healthcare professionals may contribute to fear of injections when they

provide patients with insufficient information about insulin or make light of (or even ignore) the possibility of fear of injections.

Lack of knowledge about insulin administration is one of the major factors that contribute to fear of injections. People’s lack of knowledge about the injection procedure and the requirements and benefits of insulin therapy were found to be correlated with reluctance to inject insulin (Gherman et al, 2011). The lack of knowledge may create erroneous perceptions and interpretations, such as that insulin will restrict their lives, create complications or be ineffective, or that it indicates an end stage of diabetes (Gherman et al, 2011). Brod et al (2014) also observed that fear of injections is related to misconceptions about insulin, fear of hypoglycaemia and fear of needles.

The effects of fear of injections on diabetes self-management and clinical outcomes

Fear of injections has been proven to have deleterious effects on diabetes self-management and clinical outcomes (Stotland, 2006). Similarly, Brod et al (2009) found that fear of injections may be a major aetiology behind reluctance both to initiate and to intensify insulin therapy. Inadequate adherence to insulin therapy will increase the likelihood of developing the vascular complications that often accompany diabetes.

Stotland (2006) concluded that poor glycaemic control was associated with higher levels of fear, anxiety and phobic symptoms. In addition to poor glycaemic control, fear of injections was related to a greater incidence of diabetes-related hospitalisation, greater psychological distress, higher risk of retinopathy and neuropathy, and poorer treatment adherence (Brod et al, 2009). Patients with pronounced fear of injections were also found to perform fewer daily blood glucose measurements (Stotland, 2006).

These findings suggest that fear of injections has a negative correlation with diabetes self-management and clinical outcomes.

Recommended strategies to manage fear of injections

Specific methods/frameworks to manage fear of injections are very limited. Polonsky et al (2005)

Table 1. Factors related to fear of injections.

Components	Impact
Past experiences: <ul style="list-style-type: none"> • Personal observation • Interactions with healthcare professionals • Interactions with significant others 	Misconceptions about insulin: <ul style="list-style-type: none"> • Insulin is the source of hypoglycaemia • Insulin is harmful
Insufficient knowledge on: <ul style="list-style-type: none"> • Insulin pens • Benefits of insulin • Insulin’s side effects • Progressive nature of type 2 diabetes 	Misconceptions around injections: <ul style="list-style-type: none"> • Injections are painful • Insulin therapy indicates a personal failure in managing diabetes • Insulin therapy restricts life

proposed seven strategies to overcome patients’ psychological barriers to insulin therapy. These were as follows:

- Identify the patients’ personal barriers.
- Support and maintain patients’ sense of control.
- Enhance patients’ self-efficacy.
- Educate patients properly about insulin therapy.
- Consider using insulin pens.
- Resolve needle phobia.
- Always tell patients about the progress and positive outcomes they have made.

Gherman et al (2011) recommended a different approach for managing fear of injections. Their first strategy is to use an educational approach. As education is the cornerstone of behaviour change, people need to be adequately educated about the concept of insulin treatment from the time of diagnosis. The second strategy is to use psychological techniques, such as an insulin “trial”, in which patients may quit or negotiate the therapy, and in which they have supervised injecting sessions.

Funnell et al (2004) also proposed a strategy to manage fear of injections, known as CPR: Confrontation, Persistence and Reality. The first step, confrontation, consists of a detailed, accurate and thorough assessment of a person’s barriers to insulin therapy. The next step, persistence, refers to a commitment between the person and the healthcare professional to work together in a collaborative atmosphere. The final step, reality, covers the ongoing monitoring by the patient and healthcare provider.

Page points

1. Introducing people early in the course of their type 2 diabetes to the idea that insulin therapy may one day be required makes them more likely to adhere to therapy.
2. Diabetes educators need to address the social and psychological barriers to insulin therapy.
3. Addressing concerns about hypoglycaemia and weight gain, as well as explaining that the need for insulin therapy results from the progressive nature of type 2 diabetes, not personal failure, may help.

Table 2. Summary of strategies to manage fear of injections.

Authors	Strategy	Description
Funnell et al (2004)	CPR: Confrontation, Persistence and Reality	This strategy focuses on identification of patients' barriers and ongoing collaboration between them and the healthcare professional
Polonsky et al (2005)	Seven strategies	(1) Identify patients' personal barriers; (2) support and maintain patients' sense of control; (3) enhance self-efficacy; (4) educate patients properly about insulin therapy; (5) consider using insulin pens; (6) resolve needle phobia; (7) always tell patients about the progress and positive outcomes they have made
Gherman et al (2011)	Psycho-educational	Both cognitive and psychological approaches to tackle patients' fear of injections

These recommendations, summarised in *Table 2*, suggest that there are many possible ways to help people with type 2 diabetes who have a fear of injections. However, as stated by Gherman et al (2011), these strategies are based on literature or experience rather than research. Clinical trials are needed to generate data which will serve as a foundation to build evidence-based strategies.

Discussion

This literature search and analysis revealed a limited number of sources on the management of fear of injections. The majority of the retrieved articles focused on prevalence and statistical data. However, fear of injections was found not only to be common but also to significantly impair the quality of diabetes self-management and clinical outcomes (Stotland, 2006; Brod et al, 2009).

The apparently high prevalence of fear of injections, and its detrimental effect on diabetes self-management, requires further attention from healthcare professionals (Peragallo-Dittko, 2007). The earlier people with type 2 diabetes are given education on insulin injections and how to manage problems, the more likely they are to adhere to insulin therapy. Early education should prevent people's misinterpretation of insulin therapy, which may impair their adherence to the treatment itself (Peragallo-Dittko, 2007).

The Australian Diabetes Educators Association (2007) states that diabetes educators need to provide therapeutic interventions to improve the physical, social and psychological wellbeing of

their clients. Perhaps fear of injections should become a component of the content delivered by diabetes educators, as it is a major psychological factor in insulin non-adherence. Non-adherence impairs diabetes self-management and puts people at higher risk of developing acute and chronic complications of diabetes (Gherman et al, 2011). It may also increase the cost of care and decrease the person's quality of life. Considering the deleterious effects of fear of injections, appropriate intervention strategies must be applied to tackle it. In order to do so, diabetes educators clearly require evidence-based strategies or recommendations to apply to their care.

Many authors have proposed different strategies and approaches that may be used to manage fear of injections. In addition to the strategies outlined in *Table 2*, several techniques have been proposed, including the use of insulin pumps (Brunton et al, 2006) and inhalation-administered insulin (Davis and Renda, 2006). However, these recommendations were not based on clinical research; all are theoretical or concept-based.

Recent recommendations by the Forum for Injection Technique (2016) in the UK and the American Association of Diabetes Educators (Siminerio et al, 2011) both agree that diabetes educators should introduce their patients as early as possible to the idea that insulin may be required in the future. Patients should be made to understand that insulin therapy is not an indicator of a "personal failure" to manage diabetes. In addition, patients' concerns about insulin's side effects, such

as hypoglycaemia and weight gain, should be well recognised and addressed accordingly.

Diabetes educators are encouraged to explore patients' perceptions about insulin therapy (Siminerio et al, 2011), because misconceptions about insulin are common and often trigger fear of injections. One source of these misconceptions are myths or stories about diabetes that are commonly told by relatives and friends. People with type 2 diabetes often use family and friends, rather than their healthcare professional, as their first reference. This may bring them to an inappropriate understanding about diabetes and its management, which in turn will impair their own self-management.

There is also increasing awareness about the need for diabetes educators to be skilled in psycho-educational intervention. As recommended by Kalra et al (2013), educators should have formal (or at least informal) training on psychological interventions to address psychosocial issues among patients, including fear of injections. In addition to its detrimental effect on diabetes self-management, fear of injections often involves a more profound psychological burden. Therefore, it is essential for educators to have specific training in psychological intervention, which will enable them to assist patients to cope with their problem. These interventions should be delivered in a culturally appropriate and sensitive fashion.

Conclusions

Fear of injections is a significant problem among people with type 2 diabetes and is often related to insufficient knowledge and past experience. There are several recommendations available for diabetes educators to solve patients' issues with fear of injections. However, clinical observation is needed to evaluate the effectiveness of these recommendations. ■

Australian Diabetes Educators Association (2007) *The Credentialed Diabetes Educator in Australia: Role and scope of practice*. ADEA, Canberra, ACT, Australia. Available at: <http://bit.ly/2kMlbFU> (accessed 09.02.17)

Brod M, Kongso JH, Lessard S, Christensen TL (2009) Psychological insulin resistance: patient beliefs and implications for diabetes management. *Qual Life Res* **18**: 23–32

Brod M, Alolga SL, Meneghini L (2014) Barriers to initiating insulin in type 2 diabetes patients: development of a new patient education tool to address myths, misconceptions and clinical realities. *Patient* **7**: 437–50

Brunton SA, Davis SN, Renda SM (2006) Overcoming psychological barriers to insulin use in type 2 diabetes. *Clin Cornerstone* **8**(Suppl 2): 19–26

CASP UK (2013) Critical Appraisal Skills Programme (CASP) Checklists. CASP UK, Oxford. Available at: www.casp-uk.net/casp-tools-checklists (accessed 21.02.17)

Davis SN, Renda SM (2006) Psychological insulin resistance: overcoming barriers to starting insulin therapy. *Diabetes Educ* **32**(Suppl 4): 146–52

Forum for Injection Technique (2016) *The UK Injection and Infusion Technique Recommendations* (4th edition). FIT, London. Available at: <http://bit.ly/2kzdm84> (accessed 10.02.17)

Funnell MM (2007) Overcoming barriers to the initiation of insulin therapy. *Clin Diabetes* **25**: 36–8

Funnell MM, Kruger DF, Spencer M et al (2004) Self-management support for insulin therapy in type 2 diabetes. *Diabetes Educ* **30**: 274–80

Gherman A, Veresiu IA, Sassu RA et al (2011) Psychological insulin resistance: a critical review of the literature. *Practical Diabetes* **28**: 125–8

Harris Interactive (2008) *Injection Impact Survey – Executive Summary*. Harris Interactive, Rochester, NY, USA. Available at: www.injectionimpact.com (accessed 07.02.17)

International Diabetes Federation (2015) *IDF Diabetes Atlas* (7th edition). IDF, Brussels, Belgium. Available at: www.diabetesatlas.org (accessed 07.02.17)

Kalra S, Sridhar GR, Balhara YP et al (2013) National recommendations: psychosocial management of diabetes in India. *Indian J Endocrinol Metab* **17**: 376–95

Nam S, Chesla C, Stotts NA et al (2010) Factors associated with psychological insulin resistance in individuals with type 2 diabetes. *Diabetes Care* **33**: 1747–9

Peragallo-Dittko V (2007) Removing barriers to insulin therapy. *Diabetes Educ* **33**(Suppl 3): 60–5

Peyrot M, Barnett AH, Meneghini LF, Schumm-Draeger PM (2012) Insulin adherence behaviours and barriers in the multinational Global Attitudes of Patients and Physicians in Insulin Therapy study. *Diabet Med* **29**: 682–9

Polit DF, Beck CT (2012) *Nursing Research: Generating and Assessing Evidence for Nursing Practice*. Wolters Kluwer Health, Baltimore, MD, USA

Polonsky WH, Fisher L, Guzman S et al (2005) Psychological insulin resistance in patients with type 2 diabetes: the scope of the problem. *Diabetes Care* **28**: 2543–5

Rubin RR, Peyrot M, Kruger DF, Travis LB (2009) Barriers to insulin injection therapy: patient and health care provider perspectives. *Diabetes Educ* **35**: 1014–22

Siminerio L, Kulkarni K, Meece J et al (2011) *Strategies for insulin injection therapy in diabetes self-management*. American Association of Diabetes Educators, Chicago, IL, USA. Available at: <http://bit.ly/2kbbpv6> (accessed 10.02.17)

Stotland NL (2006) Overcoming psychological barriers in insulin therapy. *Insulin* **1**: 38–45

Vinik A (2007) Advancing therapy in type 2 diabetes mellitus with early, comprehensive progression from oral agents to insulin therapy. *Clin Ther* **29**: 1236–53

Zambanini A, Newson RB, Maisey M, Feher MD (1999) Injection related anxiety in insulin-treated diabetes. *Diabetes Res Clin Pract* **46**: 239–46

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