Facilitators and Barriers to Insulin Initiation: Results of a Qualitative Study in a Public Hospital, Malaysia

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ABSTRACT

This study focused on the lived-experience of type 2 diabetes patients using insulin treatment. Type 2 diabetes is a progressive disease and insulin therapy can significantly reduce morbidity and mortality if introduced to suitable patients at an early stage, or aggressively enough to achieve good glycaemic control. This study aimed to understand the facilitators, which encourage patients to accept insulin treatment and the psychological, social and behavioural barriers to effective diabetes management. This study used Interpretative Phenomenological Analysis and Modified Grounded Theory approach. Purposive sampling method was used to select 37 patients for semi-structured interviews. Interviews were transcribed verbatim and coded. Modified grounded theory and thematic approaches were used to analyse the data and common themes were identified and categorised. From the results, three main barriers to initiate insulin therapy were discovered: worries about inability to handle using insulin, a sense of personal failure and negative perceptions of injections due to past experiences. The facilitators that encourage patients to accept insulin treatment were prior exposure to insulin injections, better side effect profile and wanting a better quality of life. In conclusion, the major fear comes from a lack of knowledge of modern insulin device. Early diabetes education and exposure to modern insulin device are crucial to increase patients' awareness of their health condition and the function of insulin. These will better prepare them mentally for insulin therapy and to ease the transition for patients to initiate insulin therapy.

Keywords: Type 2 diabetes, psychological barrier, facilitators, insulin injection

INTRODUCTION

Prevalence of type 2 diabetes is rising fast in developing countries where rapid urbanisation has caused major lifestyle changes. Modernisation has transformed Malaysia and the populations lifestyle. Associated risk factors including being overweight (33.4%) or obese (30.6%) are increasing (Ministry of Health Malaysia, 2015). Prevalence of type 2 diabetes is increasing putting an enormous economic burden on individuals, the health system and economy. This has a significant implication on pharmaceutical costs and drives increasing demand for more expensive treatments and long-term rehabilitative care (Ministry of Health Malaysia, 2010a). According to the 2015 National Health Morbidity Survey (NHMS 2015), one in five Malaysian adults over age of 30 years have diabetes. (Ministry of Health Malaysia, 2015). Compared to the previous National Health Morbidity Survey in 2011 (NHMS 2011), the prevalence of diabetic patients increased 2.3% from 15.2% to 17.5% in the 5-year period. Furthermore, NHMS 2015 estimated that the prevalence of undiagnosed diabetes was 9.2% with increasing trend with age, reaching a peak of 13.6% among age group 65-69 years old.

Good glycaemic control is critical to prevent development of diabetic complications. Due to the progressive nature of diabetes, most type 2 diabetes patients will eventually require exogenous insulin to control their blood glucose levels. In this instance, insulin can significantly reduce morbidity and mortality if introduced to suitable patients at an early stage, or aggressively enough to achieve their glycaemic control. However only 25.1% of diabetes patients in Malaysia use insulin (Ministry of Health Malaysia, 2015).

Furthermore, many type 2 diabetes patients who could potentially benefit from insulin therapy do not receive the treatment or do not have treatment initiated in a timely manner. The Malaysian Ministry of Health issued a guideline advising type 2 diabetes patients to maintain glycosylated haemoglobin (HbA1c) of less than 6.5% (8 mmol/mol). However, due to multiple factors, only 10-15% of the patients achieve this target (Ministry of Health Malaysia, 2010b).

A reluctance towards initiating insulin treatment might also reflect poor relationships between patients and their health providers resulting in poor adherence. Additionally, patients with type 2 diabetes usually have various comorbidities. Thus, most type 2 diabetes patients take multiple medications, and their perceptions of health and wellbeing and decisions on insulin treatment are unique and complex. Additionally, with the multicultural background of Malaysian patients, making decisions about insulin treatment is even more challenging and complicated than in other countries.

This paper explores type two diabetes patients' perceptions of health, wellbeing and quality of life while identifying barriers and facilitators to initiating insulin treatment.

METHODOLGY
Study Approach
Qualitative research takes a holistic perspective, which preserves the complexities of human behaviour, and places emphasis on the meanings, experiences, and views of people.
Interpretative phenomenological approach (IPA) was used for data collection. It is particularly suited in this study in finding out how the patients perceive insulin therapy and find out how the introduction of insulin therapy is affecting their personal and social world. IPA is employed to develop theory to explain these phenomena. IPA is theoretically underpinned by the traditional of phenomenology and interpretation (Smith, 2010; Smith & Eatough, 2007). This approach is phenomenological because it is used to explore an individual's personal perception or account of an event or state (Smith & Osborn, 2008).

Thus, one important theoretical touchstone for IPA is phenomenology, which originated with Husserl's attempts to construct a philosophical science of consciousness with hermeneutics and with symbolic-interactionism. It attempts to explore personal experience through an interpretative process (Biggerstaff & Thompson, 2008). IPA is a suitable approach in the research as the T2DM patients are trying to understand how they perceive insulin therapy and find out how the introduction of insulin therapy is affecting their personal and social world. Using semi-structured interview, the participants were asked to tell their story through their own interpretation of the experience; researcher would listen to their story and try to interpret what they said and how they interpreted their experience.

The aim of any qualitative research is to explore, flexibly and in detail, an area of concern. With an IPA approach, qualitative researchers are allowed to have their own conceptions when conducting interviews to explore a phenomenon or an area of concern, but researchers should not make any attempt to test a predetermined hypothesis. (Smith & Osborn, 2008). Therefore, the principles of grounded theory approach were employed in designing this research in particular the iterative process of collecting and analysing data. Particularly in the process of theory generation, theoretical sampling, and constant comparative method of data analysis.

The analysis adopted the principles of grounded theory and thematic approaches (Pope, Ziebland, & Mays, 2000) as mentioned. Transcribed interviews were coded line by line in NVivo®. Thematic analysis is used during write up where the results section contains emergent themes with a separate discussion linking the analysis to literature review. The steps involved for data analysis are described in stages (refer Table 1). However, in practice they are not independent processes but cyclic in nature. It is important to execute the principle of constant comparison in this study. Therefore, both data collection and analysis processes were cyclic in nature, iterative process and not a linear process (Miles & Huberman 1984).

Table 1: Steps of data analysis

Phase	Description of the process
Familiarising with collected data	Transcribing data, reading and re-reading the data, immersing oneself in the data, start thinking of the themes.
Generating initial codes (open codes)	Noting down ideas (codes) to summarise what is being said in each of the transcripts.
Searching for themes	Collecting together all of the initial codes from all of the interviews and collates codes into potential themes, gathering all data relevant to each potential theme.
Reviewing themes (Constant comparison)	Checking if the themes work in relation to the coded extracts and the entire data set, generating a thematic 'map' of the analysis.
Defining and naming themes	On going analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme
Producing the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis

Participants

Participants were patients diagnosed with type 2 diabetes and attending the diabetes clinic at a public hospital in federal territories of Malaysia. Inclusion criteria included 1) using insulin therapy, 2) aged over 18 years, 3) no known serious medical conditions. Patients with serious medical conditions such as emergency cardiac bypass surgery followed by the initiation of insulin treatment were excluded from this study. Patients with type 1 diabetes and gestation diabetes mellitus were also excluded.

Thirty-seven Malaysian patients currently using insulin were recruited using purposive sampling and interviewed in one hospital between April 2012 and February 2013. Interviews were conducted in English with a mixture of words and phrases of Mandarin, Cantonese and Malay language. Sampling was inductive and ceased when no new themes emerged.

Interview Procedure

Semi-structured interviews explored experience of diagnoses; experience of using insulin; influence of these experiences; perspective of insulin treatment overtime. Initial questions were developed based on researcher's own experience with diabetes patients. Table 2 shows the topic guide used in semi-structured interviews. Interviews were conducted at a quiet place at the hospital side and last for an average of 40 minutes. Interviews were audiotaped and transcribed verbatim and then imported into NVivo® 10 software.

Table 2: Topic guide used in semi-structured interviews

1. What is the experience of being diagnosed with diabetes?
• When did you find out having diabetes?
• How that happened?
• Anyone in our family with diabetes?
• Do you remember what medications were prescribed?
• Anything thing in your daily changes after you found out about diabetes?
•

2. What is the experience of using insulin to control diabetes?
• When was insulin introduced?
• Why did the doctor start you on insulin?
• How did you react when insulin was mentioned as part of your treatment plan?
• How much do you know about insulin back then?
• How did you find it using insulin injection initially?

Table 2: Topic guide used in semi-structured interviews

3. What influences these experiences?

- What was their reaction?
- How about people you work with, do they know?
- How about your friends, what do they think about insulin?

4. How do patients' perspectives of insulin treatment change overtime?

- How do you adapt to insulin treatment?
- What changes do you have to make after using insulin injection?
- If someone who has reluctant to use insulin, how would you advise them?

FINDINGS and DISCUSSION

Thirty-seven patients were interviewed. A summary of the patients' particulars are in Table 2, while Table 3 shows the six major themes identified. Three themes were perceived barriers to initiate insulin treatment: i) personal failure, ii) past unpleasant experience with injection, and iii) worries that they cannot handle using insulin. Three were facilitators: i) prior exposure to insulin injection and ii) side effect profile and iii) notion of wanting a better quality of life.

Table 3: Particulars of patients

Total Participants	37
Race	
Iban	1
Chinese	9
Malay	17
Indian	8
Mixed	2
Average years of type 2 diabetes	13.57
Average HbA1c (mmol/mol)	8.88%
Average number of Insulin	1.4
Average number of oral anti-diabetes medication	4.1

Table 4: Barriers and facilitators to insulin treatment faced by Malaysian type 2 diabetes patients

Barriers to insulin injection
- Personal failure
- Past unpleasant experience with injection
- Worries that they cannot handle using insulin

Facilitators to insulin initiation
- Prior exposure to insulin injection
- Better Side effect profile than oral medication
- Thinking of future and wanting a better quality of life

Barrier 1: Personal Failure
Thirteen participants commented that their first impression of insulin treatment was that injections are meant for severe, uncontrolled disease. Many had the notion that type 2 diabetes progressed in a step-by-step, uni-dimensional manner. People were often reluctant to switch from tablets to insulin, because of the injection. They thought that tablets are for "non-acute conditions" while injections are reserved for "serious conditions" (Brod, Kongsø, Lessard, & Christensen, 2009; Korytkowski, 2002; Peyrot et al., 2005; Polonsky, Fisher, Guzman, Villa-Caballero, & Edelman, 2005; Snoek, 2001), resulting in many type 2 diabetes patients thinking
that insulin is used as a last resort and initiating insulin signified that they have reached a critical state, creating a strong sense of personal failure (Brod et al., 2009; Korytkowski, 2002; Morris, Povey, & Street, 2005; Neumiller, Odegard, & Wysham, 2009; Polonsky et al., 2005).

> CH: I know that patient [who] is serious, and then only you need to use insulin. Normal people they don't need insulin... That is the final stage already; you have no other way, to do anything already.

This is a common finding also reported by other studies that patients often perceive insulin to be the last option of treatment, or a form of punishment, or a failure of their own doing (Brod et al., 2009; Korytkowski, 2002; Morris et al., 2005; Neumiller et al., 2009; Polonsky et al., 2005). Participants expressed that negative perceptions are often inflicted by society:

> LR: I have knowledge that people will say when you take insulin, that means your blood sugar is not under control… Because people keep on saying [that] insulin is for people who have no control.

> LT: Older generation, they think insulin is [a] very dangerous thing! For them, it [means that] you are in critical stage already.

Some participants also reported that comments from friends and family contributed to their negative perceptions;

> SL: Yeah, some friends they know [that I am on insulin], but they [are] scared. They said: "Why, your diabetes very high?" "Why, your kidney got problem?"

> SR: Usual reaction for those who are not diabetic, they said "so serious your diabetic!"

Healthcare providers in Malaysia stated that negative influences towards initiating insulin treatment and poor support from family members especially from their spouses have created barriers for healthcare providers to suggest insulin (Lee, Lee, & Ng, 2012).

Barrier 2: Past Experiences with Injection
Participants reported limited knowledge about insulin devices associating insulin injection with bad experiences in the past, such as from venepuncture or vaccinations (Korytkowski, 2002; Tan et al., 2011). Group vaccination in school is compulsory in Malaysia (Ministry of Health Malaysia, 2014).

> LT: The main thing is people scared of needle, the feeling. When you are in standard 6 you will have a jab, BCG (vaccination). That bloody needle is damn painful. That is the main thing that makes people scared. They said "jab? oh **** long needle!"

The false perception of long, big needles has generated a high prevalence of needle phobia for many type 2 diabetes patients. Apprehension regarding self-injecting is common, where one per cent suffer from injection phobia and five per cent experience emotional distress and feelings of disgust related to the self- injecting of insulin (Snoek, 2001).

Barrier 3: Worry that They Cannot Handle Using Insulin Injection
Lack of knowledge and awareness of modern insulin pen devices contributes to the barriers in initiating insulin treatment. Many participants reported that before they started insulin treatment, they had no prior knowledge of insulin administration, often associating insulin with needles and syringes seen in media.

ZZ: I get that information of course from movies and every time you see people who are really serious [with] diabetes issues that they use insulin. That is, I think just based on what was in the media.

Media influences resulted in some participants thinking that injections were only able to be administered by healthcare providers. Patients often considered initiating insulin as a complex and complicated task and this caused the reluctance and delays in insulin treatment (Lee et al., 2012). Patients were also concerned that insulin treatment might add to the burden and stress that they already experienced from managing diabetes on a daily basis, and therefore they did not feel confident that they could handle day-to-day demands of insulin (Brod et al., 2009; Polonsky et al., 2005).

S: Initially I [was] worried on how to handle the injection but then slowly you become more of an expert.

PG: Before I started insulin, I can't even imagine what the needle looks like. There is no education to show that actually it is just a very small needle only, not a very big needle. You know, people [might] think "Wah the bloody big needle, don't know how to jab". Initially I think [like that too]… People don't know what they are getting into.

MM: But with these new devices, only recent year I know about it. Before was, the bottle, the syringe, withdraw from the bottle, my god! [That was] 10 years ago!

TC: No, but maybe the earlier form of insulin injection probably gave people a wrong idea. Those days we had this syringe and vials and all that.

This factor also resulted in a high prevalence of psychological insulin resistance (PIR); worry about technical concerns, fear of painful injections, fear of inflicting self-harm, fear of self-injecting or dislike of daily injections (Brod et al., 2009; Mollema, Snoek, Herman, Heine, & Ploeg, 2001; Zambanini, Newson, Maisey, & Feher, 1999, Hassali et al., 2013). Participants expressed that their initial fear of using insulin was partly due to fear of self-injecting, largely caused by a lack of knowledge and awareness of modern insulin pen devices and the ease of using them.

Facilitator 1: Prior Exposure to Insulin Injection
Participants who had close family members using insulin were more aware of the treatment, therefore they did not usually express negative reactions:

AZ: I said insulin was ok because my dad is diabetic. I was injecting him while he was sick. So, is like a normal thing for me… I don't have any fear [towards injecting insulin].

YP sees the positive effects of insulin treatment and that it improves glycaemic control:

YP: No fear, no fear, because I requested for it. Because I mean, you see I come from a family of diabetics, from both side of them, father side and mother side. So, we have a lot of experience with those older than us. It is nothing for me to be shocked about or even insulin, I was the one who actually requested for it.

Participants with prior exposure to insulin were positive towards adding insulin to their type 2 diabetes management. Participants usually encountered insulin because of close family who were using insulin, resulting in a better awareness of the positive effects of insulin and the side effects. Since they have been exposed to insulin devices, they are more familiar with them and the techniques required, easing them into taking up insulin treatment when compared to those with less awareness.

In a recent Malaysian study, participants agreed to initiate insulin after learning about the benefits of insulin from other people's experience. They affirmed that their acceptance became stronger when they personally experienced the benefits of insulin in terms of improved general health, well-being (Abu Hassan et al., 2013). These findings were supported by Hunt (Hunt, Valenzuela, & Pugh, 1997), they showed that previous personal

experience, observations and interactions with others influence people's attitudes towards insulin. They concluded that type 2 diabetes patients are involved in an active process of assessing the expected benefits and costs of using insulin based on what they have seen and felt, as well as what they have heard from friends, family, and health professionals.

Facilitator 2: Better Side Effect Profile than oral medication
In general Malaysian patients have the notion that 'Western' medicines can harm the body because they are synthetic and made from chemical substances (Babar et al., 2012; Jose, Chong, Lynn, Jye, & Jimmy, 2011). This notion usually refers to oral medication which people believe it will go through the stomach, kidney and liver hence causing damage to the human body. An interesting finding in this study is that they prefer to use insulin because they are worried about the side effects from an oral anti-diabetic medication (OAM). They think that tablet medications for chronic illnesses that patients have to take on a long-term basis, 'weaken' the body system (Ariff & Beng, 2006):

> SR: [Oral] medication I came to know that there are a lot of side effects. So, I think insulin is much better compared to [oral]… So when I came in to see the doctor, they [also advised me that] the medication doesn't help for long term, it got side effects and all that. When I heard that, I decided to take up insulin.

> YF: Yes, I have asked around. I have considered that taking all the medication is not good for my body so, I had been thinking of using injection.

The notion that western medication for chronic diseases would cause organ damage is universal rather than culturally specific (W. a Lai, Lew-Ting, & Chie, 2005; Pound et al., 2005). Participants from this study believed that oral medication could cause undesired effects to body organs such as liver, kidney and pancreas:

> ET: Insulin is better. Actually, with tablets I don't think it is good. It will affect our liver, affect our body organs… With modern medicine nowadays, it will affect your body parts; I know that most of the medicine will.

With the notion that oral medication could 'deposit' in the body organs causing unwanted side effect, most patients find that insulin is more straightforward and therefore it is more acceptable to initiate insulin treatment. Participants were also fed up with taking too many oral medications:

> HH: I think if insulin is prescribed earlier to me, then I would end up with less medication to take. If I have started insulin first then I don't have to take so many medication

> BK: Insulin is better compared to tablets, do you know why? Because with insulin, I only have to inject it in the morning, and then once at night time. But with pills, I have [taken] the diabetes pills a few times a day and I already on so many other pills for my heart and others problems. I counted I need like 10 medication! Sometimes I am felt very angry because I have so many tablets to take.

Type 2 diabetes often presented in patients with multiple health conditions such as hypertension and dyslipidaemia (Blonde, 2005; Ministry of Health Malaysia, 2009). Due to the perception that oral medication will go through the body systems and cause harm to the organs, taking multiple medications will furthermore multiply their fears of taking medication. As a result, many participants in this study preferred to use injections as they think that injection 'goes directly' into their body system.

> RK: Because the tablet doesn't work. So, they want to use the insulin to fast into the blood stream and control [diabetes]. Tablets, I think will take certain hours to go inside the blood stream, insulin goes straight into your blood. Once insulin goes in, I can feel the effect. … It is better than tablet. Because insulin goes direct, and we can feel the effect.

YP also explained that oral medication would go through kidneys and would subsequently be excreted through urine, therefore he believed that the drugs would 'deposit' in the kidneys, which could lead to kidney failure. Whereas insulin is injected directly into the blood stream and directly lower blood sugar level, therefore it would not harm the kidney. This notion may also be accentuated by the metaphor of the kidney in Chinese culture (W. A. Lai, Chie, & Lew-Ting, 2007). The kidney is seen as a vital organ containing the inherited 'vital essence' and sperm. Medication, which goes through kidney, is perceived to cause loss of vital essence leading to a shortened lifespan.

> YP: Plus, also too much drugs goes through the kidneys and all that. Maybe it is a concluded fact or not I don't know but to me anything that goes through the kidney gets deposited there, is not as good as something that goes right through to the bloodstream. So, in a way I think why not, I was prepared and asking the doctor to give insulin to me… If it works and it doesn't go through the kidney, it just goes directly into the bloodstream and does its works there, that's all that matters to me.

Facilitator 3: Quality of Life: Thinking of Future
Another prominent facilitator that encouraged participants to accept insulin is to achieve optimal control of type 2 diabetes. The motivators behind this facilitator are to prevent diabetes complications and thinking about the future and well-being.

> CH: Because you know about in the future you will get something probably affect other organs and all these… Whatever [complication] in the future, anything that will be affected.

> LM: Get a better health. Like your eyes, kidney, and all that. Depending on [insulin], if you want a good health... I have to live for the rest of the life well.

There is a strong association between well-being and diabetes complications. Diabetes complications are one of the predictors for type 2 diabetes patients to seek insulin treatment, as they want a better quality of life. A few participants in the interviews understand that insulin treatment is effective in improving their glycaemic control and will reduce future diabetes complications, therefore subsequently agreed to initiate insulin treatment. They were not scared about insulin injections; in fact, they were more scared to suffer from diabetes complication and symptoms:

> AZ: And then I started feeling numbness on my feet. That is the reason why I said ok, why not take insulin… Because I could not feel my feet, I was numb… the medication, because I need this.

> NR: To prevent more complication… I was very worry that sooner or later my kidney will die off. So, I have to accept the treatment.

However, some patients who accepted insulin treatment to prevent diabetes complications do have a negative attitude as they often felt that they had no choice but to use insulin.

> YLC: Maybe my brother case, because his legs are all blacken, he had trimmed off one of his toes. The doctor did say that he wanted to trim [the leg]. … That maybe triggers me, before that also trigger me that I feel like I do not want to suffer like him…

> LR: Because I have a family member, my uncle recently passed away. His eye was completely blind, kidney damaged, heart was swollen, he can't walk and he was bedridden.

These participants understand that diabetes complications could affect their quality of life and therefore they had to accept insulin treatment in turn for better glycaemic control. As mentioned by Peyrot (2005) in a multinational study, as patients' diabetes controls worsen, they may become more receptive to a treatment strategy they have previously avoided. In this instance, participants became more receptive to insulin treatment which they would have avoided previously. Some patients expressed that they had no choice but to start on insulin:

ZT: What can I do? I have no choice; since the tablet is not effective the only way is to use insulin. What else can I do? If the tablet can't control our blood sugar well, and [if] I don't want to use insulin, I will die faster!

Participants explained that if they had a choice, they would not use insulin but they felt that they had no other alternatives and were forced into accepting insulin treatment. Lai et al. (2007) reported in their qualitative research that many patients wrongly assumed that type 2 diabetes progressed in a step-by-step, uni-dimensional manner. Therefore, insulin to many patients would mean the last resort when other agents failed to control their diabetes.

Similarly, in this study, the participants knew that insulin would be their last resort when tablets failed to control their blood glucose level. As mentioned by ZT, "if I don't want to use insulin, I will die faster!" This shows again the importance of good healthcare provider-patient communication. When discussing the initiation of insulin treatment, it is essential to ask patients about their thoughts or feelings about insulin. Many studies report that starting insulin treatment is often perceived as a personal failure; patients often felt a strong sense of failure when they were recommended to go on insulin treatment (Brod et al., 2009; Korytkowski, 2002; Morris et al., 2005; Neumiller et al., 2009; Polonsky et al., 2005). It is essential to understand patients' thoughts or feelings about insulin to ensure that counselling about insulin is supportive, tailored for each individual patient, and effective (Funnell, 2007).

One of the powerful motivators to prompt participants into accepting insulin treatment is their bonding with their family and their desire for a better quality of life in future.

LR: Then they asked "why do you want to go for insulin?" I said because I wanted to get pregnant, I want to have a good lifestyle…

Some older participants accepted insulin treatment because they want to improve their physical well-being. Beside desiring a better quality of life, they also prefer not to burden their family members.

S: And I got great grandchildren. I feel that I should take care of myself.

YLC: I should follow this way, I should monitor. At least I have a… longer life… something that you can take care of your own self.

CONCLUSION AND RECOMMENDATIONS

In conclusion, this study has shown that poor knowledge of type 2 diabetes, lack of awareness of modern insulin pen devices and association of insulin to past bad experiences with injections are main contributors to the psychological insulin resistance, as illustrated in Figure 1. This resulted in patients being worried that they are unable to handle injecting insulin, fear of self-injecting and sense of personal failure.
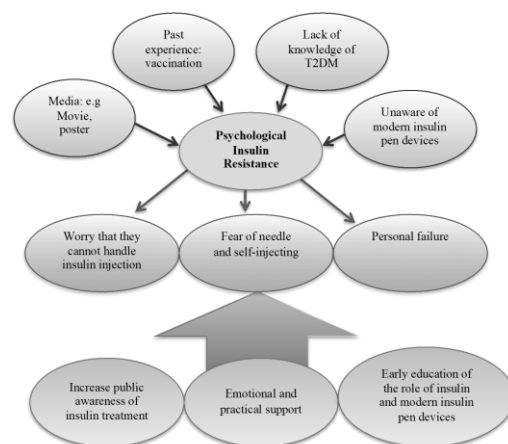

Figure 1: Barriers to initiate insulin treatment

Educational campaigns to raise the public awareness of type 2 diabetes and promote the availability of modern insulin pen devices could alleviate the negative perception of insulin treatment and enable self-injecting and handling insulin to be more acceptable to patients. This should be promoted during early diabetes education together with giving patients knowledge on the progressive nature of type 2 diabetes. The guidelines for insulin initiation should be simplified and delivered together with tailored, individualised counselling.

Practical as well as emotional support is not only confined to healthcare providers, support from relatives and friends who used insulin also play a crucial role in promoting insulin acceptance among patients. Experiential learning through observing their relative coping well with insulin treatment can help patients to alleviate their negative altitudes and misconceptions about insulin. Continuous education as well as practical and emotional support from healthcare providers and people around patients are valuable for insulin acceptance and self-efficient to use insulin injection.

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