



# Health Care Providers' Emotional Responses to Their Patients' Hypoglycemic Events: Qualitative Findings From the InHypo-DM Study, Canada

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**OBJECTIVE** | Hypoglycemia can cause psychological distress in people with diabetes; however, less is understood about the emotional impact of hypoglycemia on their health care providers (HCPs). This article focuses on the experiences and emotions of HCPs caring for patients with diabetes.

**METHODS** | This was a descriptive qualitative study from the InHypo-DM research program. Purposive sampling was used to recruit 20 HCPs from a variety of professions for 30- to 45-minute semi-structured interviews. An iterative analysis was conducted to identify the overarching themes.

**RESULTS** | Three overarching themes encompassed the responses of participants when their patients experienced hypoglycemia. The first was a sense of professional responsibility, as participants felt they must have failed or inadequately fulfilled their professional duties. The second was a more personal range of emotions such as sadness and guilt. The final theme was how these emotions created a “call to action,” prompting participants to identify potential strategies to prevent future hypoglycemic events.

**CONCLUSION** | This qualitative study highlights the emotional impact of patients' hypoglycemia on HCPs. Although it may have been expected that HCPs have a strong sense of professional responsibility, it was unexpected that these responses often became personal emotions. To ameliorate the negative impact of these responses on patient care, HCPs should engage in activities that enable them to anticipate and manage their own emotional responses. In addition, strategies to optimize hypoglycemia detection and prevention should be promoted.

To minimize the complications associated with diabetes, health care providers (HCPs) work diligently to help patients achieve guideline-recommended blood glucose targets (1–3). Unfortunately, hypoglycemia persists as one of the most common adverse events associated with managing type 1 and type 2 diabetes, particularly if insulin or secretagogues (sulfonylureas or glinides) are used. Canadian data recently published by the InHypo-DM study quantified the rate of nonsevere hypoglycemia to be 55.7 and 28.0 events per person-year in type 1 and type 2 diabetes, respectively. Although lower rates were reported for severe hypoglycemia (defined as requiring the assistance of another individual), rates were still as high as 2.5 and 2.4 events per person-year in type 1 and type 2 diabetes, respectively (4).

The consequences of hypoglycemia are well described and can include both physical (5,6) and psychological (7–11) morbidity, as well as social issues such as employment limitations, financial concerns, and challenging social interactions (12). The 2005 Diabetes Attitudes, Wishes and Needs study (8) was one of first studies to examine the impact of the psychological health of patients with diabetes on HCPs. It found that up to 41% of patients struggled with their psychological health, and only 42% of HCPs felt able to identify, evaluate, and meet their patients' psychological needs.

To reduce the risk of hypoglycemia, HCPs may be influenced to recommend higher glucose levels for their patients than guidelines suggest. A Canadian study found that nearly 76% of HCPs would treat their patients with

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diabetes more aggressively if not for the concern of inducing hypoglycemia (13). The InHypo-DM (understandINg the impact of HYPOglycemia on Diabetes Management) Canadian study corroborates these findings by reporting that 43% of HCPs (nurses, physicians, dietitians, and pharmacists) worry about hypoglycemia, which in turn may lead to the modification of recommended treatment guidelines in an effort to avoid it (14).

Although it is understood that hypoglycemia can cause psychological distress and negative emotions in people with diabetes and can motivate them to modify treatment recommendations to reduce this fear (15–19), little is known about the emotional and psychological effect of patients' hypoglycemia on HCPs. To address this gap, our research team developed the InHypo-DM study. This mixed-methods study explored the following objectives: 1) to understand the factors that can facilitate or hinder hypoglycemia self-management behaviors among people living with type 1 or type 2 diabetes who are at risk for hypoglycemia, among the significant others of people with diabetes, and among HCPs involved in their care; and 2) to gain a deeper understanding of the frequency of nonsevere, nocturnal, and severe hypoglycemia. This article focuses on part of the first objective, specifically, the experiences and emotions of HCPs caring for people with diabetes. A deeper appreciation of the emotions that HCPs experience in their practices can lead to better support for HCPs in providing optimal and effective diabetes care to their patients.

## Research Design and Methods

This study used a descriptive qualitative approach, which is well suited to the exploratory nature of our investigation (20). Ethics approval for this study was received from the University of Western Ontario's Research Ethics Board (REB #: 105992).

### Participant Recruitment

Participants were recruited from Southwestern Ontario, Canada—an area in which the reported prevalence of diabetes is ~8.8% (21). This was a purposive sample, and we recruited a maximum variation sample to reflect a variety of HCPs (endocrinologists, family physicians, nurse practitioners, registered nurses, dietitians, and pharmacists). Participant consent was obtained at the time of the interview.

### Data Collection

A 30- to 45-minute semi-structured interview was conducted with each participant. The interviews were conducted by

members of the research team in a location convenient to the participants. An example of a question used in the interviews was, “How does it make you feel when your patient has severe and/or multiple hypoglycemic events?” Data collection ceased upon reaching saturation, that is, when there were no new emerging themes. All of the interviews were audiotaped and transcribed verbatim.

### Data Analysis

Data collection and analysis occurred concurrently. The analysis was both iterative and interpretative. During the initial phase of analysis, members of the research team independently reviewed each transcript to identify key concepts emerging from the data. Team members then met to compare the independent reviews, culminating in the development of a coding template, which evolved over the course of the analysis. NVivo 10 software was used for coding and organizing the data. Upon completion of this phase, the team members then met to further synthesize and interpret the main themes. Throughout the analysis, the research team identified exemplary quotes reflecting the main themes specific to the topic of this article.

### Credibility and Trustworthiness

Credibility and trustworthiness of the data were enhanced through field notes generated after each interview, verbatim transcripts, and independent and team analysis. Reflexivity was an important process, as team members came from different backgrounds (social work, family medicine, and epidemiology) and needed to reflect on how their individual values and experiences shaped the interpretation and reporting of data. Therefore, throughout the data analysis and preparation of the manuscript, they frequently discussed as a team their potential biases.

## Results

Twenty HCPs were recruited, including four endocrinologists (Endos), four family physicians (FPs), three nurse practitioners (NPs), three registered nurses (RNs), two registered dietitians (RDs), and four pharmacists (Pharms). Participants included six men and 14 women whose average age was 49 years and who had been in clinical practice an average of 21 years. The endocrinologists practiced in both the hospital inpatient and outpatient settings, and the pharmacists practiced in the community. The remainder of the participants practiced in the context of primary care.

The analysis revealed three equally prominent themes involving emotions experienced by participants when their patients experienced hypoglycemic events ranging from nonsevere to severe. The first theme was a sense of professional responsibility, as participants felt they must have failed or inadequately fulfilled their professional duties. The second theme extended beyond professional responsibility to encompass a more personal range of emotions voiced by the participants. The final theme was how the sense of professional responsibility and these personal emotions created a “call to action,” prompting participants to identify potential causes of their patients' hypoglycemic events and strategies to prevent future events.

### *A Sense of Professional Responsibility*

Many participants assumed responsibility when their patients reported experiencing a hypoglycemic event. As one said, “So, if they have frequent hypoglycemia, absolutely I feel quite responsible” (RD-1). Participants also articulated how they experienced a sense of professional failure, feeling that they had inadequately fulfilled their professional duties. One participant said, “Well, you feel terrible. You feel that you failed them as an educator, as a pharmacist, as a health care professional” (Pharm-1). Another participant explained, “I think it makes me feel like I haven't done my job right, but I have to look back and say to myself, ‘Did I explain this to them?’” (Pharm-4).

Participants also articulated that they perceived a sense of professional failure in the communication and education they provided to patients about the management of hypoglycemia. As one said, “Well, I feel that there's probably something that I'm not doing, and maybe there's some lack of education, lack of communication, so I feel bad” (FP-4). Concerns about management errors were also a contributing source to a feeling inadequacy. One participant explained:

*“I mean, it doesn't make me feel good. It's not about me. It makes me very worried that, ‘Did I miss something when I was doing my assessment?’ and that I potentially either recommended a particular medication or didn't read that patient well enough to understand or assess their ability to manage their medication.”* (RN-1)

For some participants, concerns about the impact on patients echoed the Hippocratic oath of “do no harm.” As one said, “It's the feeling of inadequacy and ... at least for me, personally, a need to improve and make sure that we're not inadvertently harming patients” (FP-1). This sentiment was particularly salient for participants who provided inpatient

care and were supervising their patients at the time they experienced a hypoglycemic event. As one put it, “If I have a patient in hospital that I'm directly managing their insulin and directly managing their diet, and they have a low, I know I ... do feel responsible” (Endo-1).

### *A Range of Personal Emotions*

Although it may be expected that HCPs would assume some sense of professional responsibility, what was unexpected was that the vast majority took this experience beyond a professional response to a more personal level of emotion. Sadness was expressed, such as, “How do I feel? I feel sad” (Pharm-4). Participants often used the term “feeling bad” to describe a sense of guilt, as in, “I feel bad” (FP-4). Another participant commented, “Like, you do personally feel bad” (Endo-1).

Guilt was a frequently expressed emotion. One participant said, “I can't help as a provider but feel a little guilty that I haven't done something quite right, especially with their frequent hypoglycemia” (RN-2). Another participant explained how feeling “bad” and guilty were often intermingled:

*“You feel bad for them. You feel maybe you've let them down. But at the end of the day, again, I'll say the word guilty in the sense [that], if I played a part in that by not explaining something, I feel bad about that.”* (Pharm-5)

A few participants used very powerful language, such as “horrific” in describing their emotional responses to their patients having a hypoglycemic event. “It's horrific if you find out that someone is becoming a hospital frequent flyer, and you haven't given them the materials they need to manage on their own” (RD-1). Learning of the sequelae of patients' hypoglycemic events was also very distressing for some of the participants:

*“I guess one of the worst things is because usually something bad happens. They fall and hit their head, or they act inappropriately somewhere. It always makes me feel bad. Because if it's a car accident, then you feel horrible. It's one of the worst things.”* (Endo-4)

### *A Call to Action*

Many of the participants used their professional responsibilities and personal feelings as a call to action to identify potential causes of their patients' hypoglycemic events and move forward in their patients' care. As one put it:

*“If anything, it just makes me think I have got to keep trying in terms of other approaches and teach them about hypos and avoiding hypos. As I said, I feel guilty and motivated in terms of trying to re-educate.” (RN-2)*

Once again, medication management was identified as a possible area for corrective action. Said one participant, “So, I feel if I’m the one that’s doing the main prescribing, I feel somewhat responsible, and responsible for trying to correct that” (FP-3).

For some, this call to action presented an opportunity for reflection and analysis of possible causes of the hypoglycemic event. One participant explained, “Well, it puts me sort of on high alert to figure out what’s going on. Because it either means I’m missing something, or there’s something going on, so I go into sort of CSI [crime scene investigation] mode to figure it out” (NP-1). In addition, a participant explained, “Did you miss something, or could you have reinforced it in a different way? ... I would go back and see what caused that [hypoglycemia] to occur” (RD-2).

Reflecting on prior calls to action that have been successful for patients was another approach employed by HCPs. One said, “I’ve worked with patients who have lost their driver’s licenses because they’ve had lows, so we’ve worked together to get their license back and give them that part of their life back” (NP-3).

For others, the call to action prompted a more patient-focused response, such as encouraging and instilling hope in the patient:

*“I try to encourage them to take control of their health, try to give them ownership; that’s important. Again, I give them hope—it’s not hopeless—and try not to make them feel guilty, right? Just show them that there is light at the end of the tunnel.” (FP-4)*

Some participants focused on improving effective communication and coaching strategies. Participants identified the importance of ensuring that their patients understand the information they are communicating. For example, “I need to check for understanding more carefully in the future” (Pharm-5). HCPs described communication as an important component of preventing hypoglycemia. As one put it, “I think effective communication and effective information sharing are the keys” (Pharm-2). Ultimately, participants understood the need for determination and perseverance in what could, at times, be a slow and long-term process:

*“So, I don’t view it as a personal failure. I feel it’s a bad thing for my patient. I know I’m obsessive about talking*

*about hypoglycemia, but that doesn’t mean that my patients hear it or act on it. So, I don’t know what the answer is. I think the answer is you just keep trying, and so, I keep trying with my patients.” (Endo-3)*

## Discussion

This study is the first of its kind to illuminate the professional and personal responses of HCPs when they became aware that their patients had experienced hypoglycemia. These responses included a heightened sense of professional responsibility and a range of negative personal emotions, which in turn prompted a reflexive call to action.

Individuals in all health care disciplines assume a level of professional responsibility for the care of their patients. Therefore, it was not surprising that our participants expressed a sense of professional failure, particularly in the areas of communication and education, when their patients experienced hypoglycemia. A strong sense of responsibility to individual patients has been linked with greater practice satisfaction among physicians (22). Furthermore, physicians’ sense of responsibility toward their patients has been firmly linked to caring for patients over time with a longitudinal approach (23) that is consistent with the type of care provided for people with chronic diseases such as diabetes. This sense of professional responsibility has also been documented in other health care professions. Gabrielsson et al. (24) found that nurses and nursing assistants described taking responsibility for their actions as an essential component of good nursing practice. Pharmacists, too, feel responsible for drug therapy outcomes, as was explored by Planas et al. (25).

In addition to a sense of professional responsibility, our study also found that HCPs experienced a range of emotions such as sadness and guilt when patients experienced hypoglycemia. Our study showed that poor patient outcomes—in this instance, hypoglycemia—may cause HCPs to experience negative emotions. Of note, Martin et al. (26) found that most clinicians believe their emotional state influences the quality of care they provide. Therefore, it is important to understand HCPs’ emotions because these emotions can affect not only themselves but their patients.

Although hypoglycemia is not typically the result of medical error and can occur even with optimal clinical management strategies, the medical error literature describes similar emotional responses to those found in this study. Nurses, physicians, and pharmacists have been reported in various studies to experience guilt, depression, fear,

anxiety, shame, and self-blame following a medical error (27–29). Within our study, participants demonstrated very similar responses to their patients' hypoglycemia, regardless of their profession.

The final theme expressed by our participants was a call to action, as they constructively used their sense of professional responsibility and emotional responses to help prevent future hypoglycemic events. Similar to prior literature (30), the call to action was described by our participants to prompt changes in practice. The main strategy that characterized our participants' call to action was to optimize communication with patients.

There is a clear role for communication between patients and providers regarding both improved patient outcomes (31–34) and strengthening the patient-provider relationship (35). Chronic disease management is best accomplished if patients become effective self-managers; but for this to occur, frequent and longitudinal communication between patients and HCPs must be present (36). Because communication between patients and providers is bidirectional, it is important to consider the communication behaviors of both parties. From providers' perspective, taking a person-centered approach focusing on behaviors such as active listening, expressing empathy (32,33,35), and actively engaging patients in their care (34,37) has been shown to be positively associated with improved patient outcomes and patient-practitioner relationships.

### *Limitations and Future Research*

This study was conducted in one geographical region in Ontario and therefore may not be transferable to other HCPs. Another study limitation is that we did not include patient data; therefore, patients' perceptions of their HCPs' thoughts and feelings about hypoglycemic events requires future research. In addition, we did not explore how best to support HCPs who have an emotional response. Future research is warranted in this area.

### **Conclusion**

This study found that HCPs experience a sense of professional responsibility and emotional responses to patients' hypoglycemic events. Therefore, strategies that reduce the incidence of hypoglycemia, which clearly provide benefit to patients, can also reduce negative HCP emotions. These practices could include continuous professional education with a focus toward understanding clinical practice guideline recommendations regarding how to reduce hypoglycemia; understanding

when and how to preferentially use newer-generation antihyperglycemic medications that may reduce the risk of hypoglycemia; improving patients' self-management strategies (36,38); and, finally, being able to communicate this information to enhance patient education.

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### **AUTHOR CONTRIBUTIONS**

J.B.B., S.M.R., S.W.-B., A.R.-L., B.L.R., and S.B.H. contributed to the conception and design of the study. J.B.B., S.M.R., Y.V., and C.M. contributed to the qualitative analysis. J.B.B., S.M.R., Y.V., and C.M. wrote the manuscript. All authors contributed to intellectual discussion, reviewed manuscript drafts, and approved the final version of the manuscript. J.B.B. and S.B.H. are the guarantors of this work, and as such, had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

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