UNDERSTANDING HOW PATIENT CONFIDENCE IN KETONE INTERPRETATION RELATES TO TESTING BEHAVIOR AND DIABETIC KETOACIDOSIS AWARENESS AND CONCERN IN ADULTS WITH TYPE 1 DIABETES

Jackson Lee, Trevor Bell, Philly De Piante, Richard Wood
dQ&A Market Research, Inc., San Francisco, CA, United States

BACKGROUND AND AIMS

Diabetic ketoacidosis (DKA) is a serious and potentially life-threatening complication of type 1 diabetes (T1D) caused by the buildup of acidic ketone bodies in the blood. Ketone testing is commonly recommended during illness, sustained hyperglycemia, or when symptoms suggest possible DKA, as early identification of elevated ketone levels allows for prompt intervention.

Patient confidence in ketone testing, particularly in interpreting the results, may influence testing behaviors and responses to abnormal readings. Confidence may also be shaped by prior experiences with DKA, concern about its development, and education received from healthcare providers. This study examined how confidence in interpreting ketone levels from commonly used test kits relates to real-world testing behaviors, as well as experiences, education and perceptions of DKA.

METHODS

In May 2025, 1,419 U.S. adult with T1D and a urine, blood or breath ketone testing kit completed an online survey, in which they were asked to rate their understanding of the results from their testing kits ("do not" to "completely understand"). Participants also reported the number of DKA events that they experienced in the past year, the situations that would prompt them to test their ketones, their degree of concern for developing DKA ("not at all" to "extremely concerned"), and whether their healthcare provider had ever initiated a discussion about DKA with them.

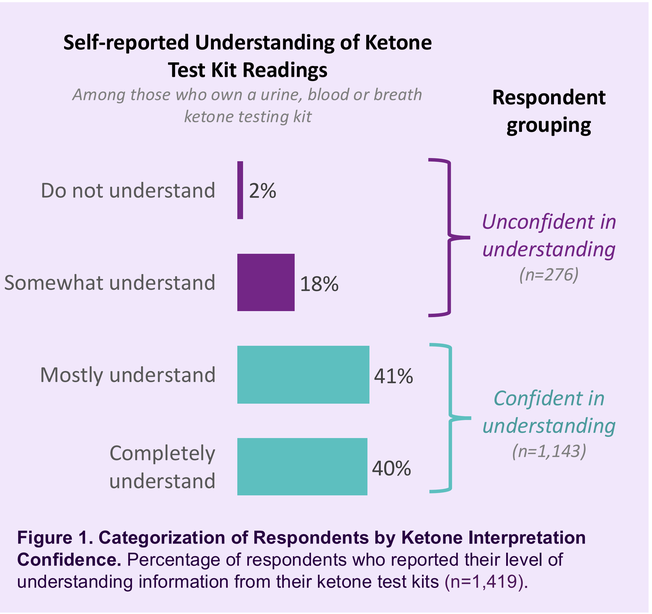

Figure 1. Categorization of Respondents by Ketone Interpretation Confidence. Percentage of respondents who reported their level of understanding information from their ketone test kits (n=1,419).

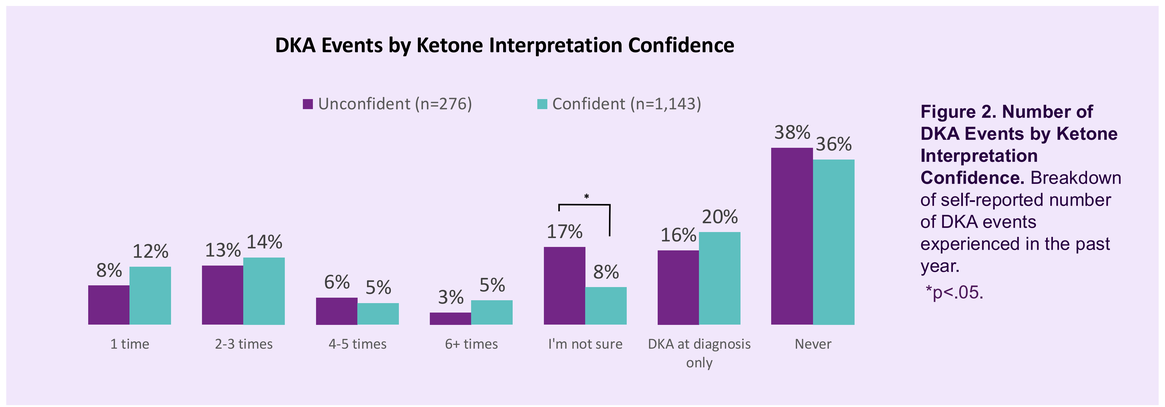

Figure 2. Number of DKA Events by Ketone Interpretation Confidence. Breakdown of self-reported number of DKA events experienced in the past year.
*p<.05.

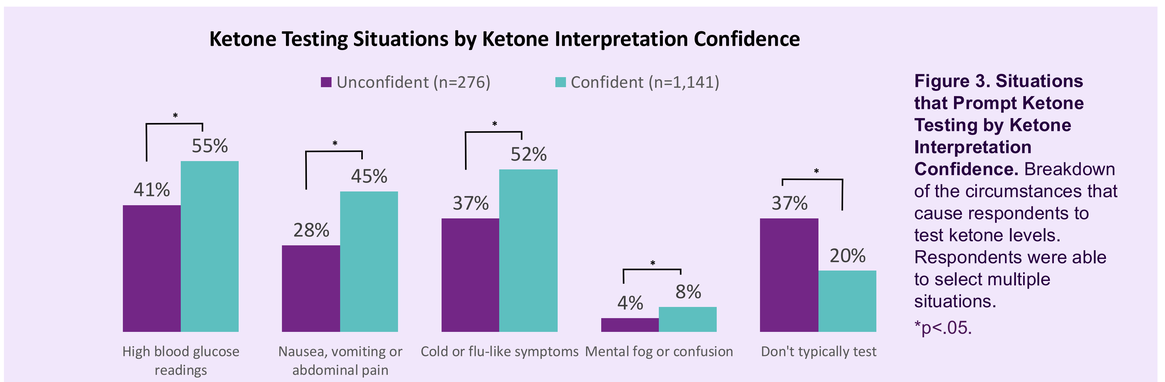

Figure 3. Situations that Prompt Ketone Testing by Ketone Interpretation Confidence. Breakdown of the circumstances that cause respondents to test ketone levels. Respondents were able to select multiple situations.
*p<.05.

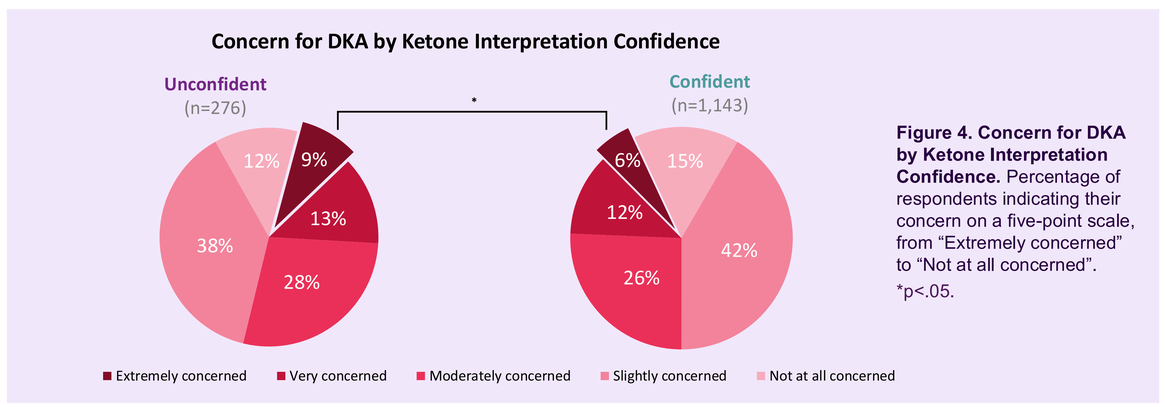

Figure 4. Concern for DKA by Ketone Interpretation Confidence. Percentage of respondents indicating their concern on a five-point scale, from "Extremely concerned" to "Not at all concerned".
*p<.05.

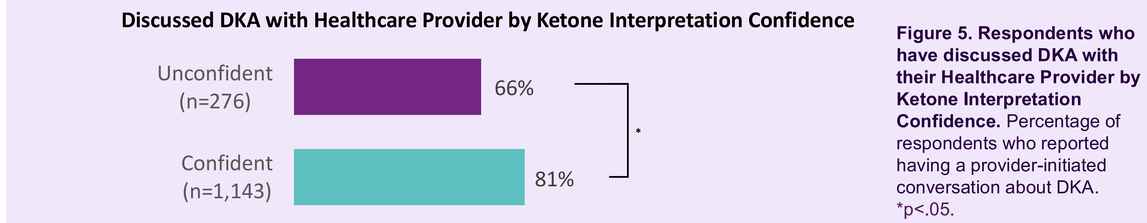

Figure 5. Respondents who have discussed DKA with their Healthcare Provider by Ketone Interpretation Confidence. Percentage of respondents who reported having a provider-initiated conversation about DKA.
*p<.05.

RESULTS

Based on their self-assessment, respondents were classified as either unconfident (*"do not"* or *"somewhat understand"*) or confident in their interpretation of ketone levels from their test kits (*"mostly"* or *"completely understand"*). The majority of respondents indicated that they were confident in understanding ketone readings (81%, n=1,143).

Compared to respondents who were confident in their ability to interpret their ketone levels, unconfident respondents were more likely to report that they were unsure of whether they had experienced any DKA events in the past year (17% vs 8%, p<0.0005).

Additionally, confident respondents were more likely to test their ketone levels across all situations that might suggest DKA, including when they notice high blood glucose readings (55% vs 41%, p<0.0005), when they experience nausea, vomiting or abdominal pain (45% vs 28%, p<0.0005), cold or flu-like symptoms (52% vs 37%, p<0.0005), or mental fog or confusion (8% vs 4%). In accordance, unconfident respondents were more likely to report that they don't typically test their ketones (37% vs 20%, p<0.0005).

Although over half of both confident and unconfident respondents were either only slightly or not at all concerned about the risk of DKA, a significantly greater percentage of unconfident respondents were extremely concerned with the risk of DKA compared to confident respondents (9% vs 6%, p=0.048).

Finally, confident respondents were more likely to report that their HCP had talked to them about DKA compared to unconfident respondents (81% vs 66%, p<0.0005).

CONCLUSION

Adult T1Ds not confident in understanding ketone test results were more likely to report uncertainty about past DKA events and less likely to test across high-risk situations as well as report that they had discussed DKA with their healthcare provider. Yet they expressed higher rates of extreme concern regarding DKA compared to confident T1Ds. This mismatch between understanding, behavior and concern suggests critical gaps in both patient education and provider communication needed to improve ketone testing practices and reduce DKA risk.

DISCLOSURES

The research in this presentation was carried out and funded by dQ&A Market Research, Inc., which provides research services for a fee to its clients. dQ&A has several clients (>10) in the diabetes field.