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## BACKGROUND

- Fasting is religiously obligatory for healthy Muslims during the holy month of Ramadan. Certain groups of people are excused from fasting like individuals with medical conditions, such as diabetes. However, some Muslims with diabetes may still choose to fast despite potential complications.
- A survey we performed in 2022 showed a gap in medical knowledge and practice around caring for Muslim patients and in particular those with diabetes who fast**
- 47% of students and residents do not follow specific guidelines/recommendations for managing diabetes in this population
  - 32% do not advise their patients on how to manage diabetes
  - 36% do not adjust medications for their fasting patients
  - 28% do not discuss specific complications that can occur with fasting
  - 22% do not recommend more frequent glucose monitoring
- 75% reported feeling somewhat or very comfortable providing care
- 58% strongly or somewhat agreed they received adequate training
- Yet nearly 1 in 5 (21%) strongly or somewhat disagreed that they have received adequate training**
- Most (91%) strongly or somewhat agreed that training to manage the health of Muslims during Ramadan should be incorporated into residency training and 87% strongly/somewhat agreed that training should be incorporated into the medical school curriculum.

Figure 1: How often do you ask patients about fasting during Ramadan?

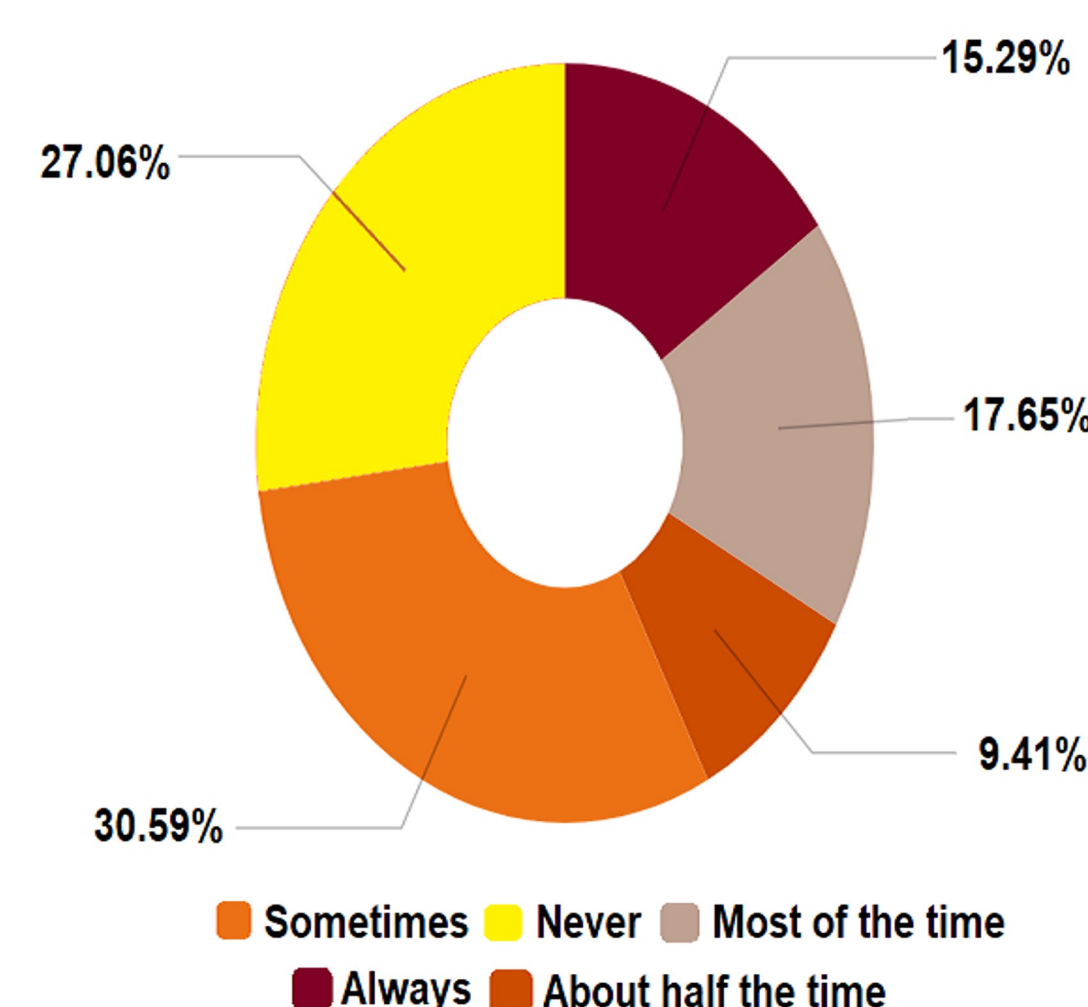


Figure 2: How often do you advise your patients on how to manage diabetes during Ramadan?

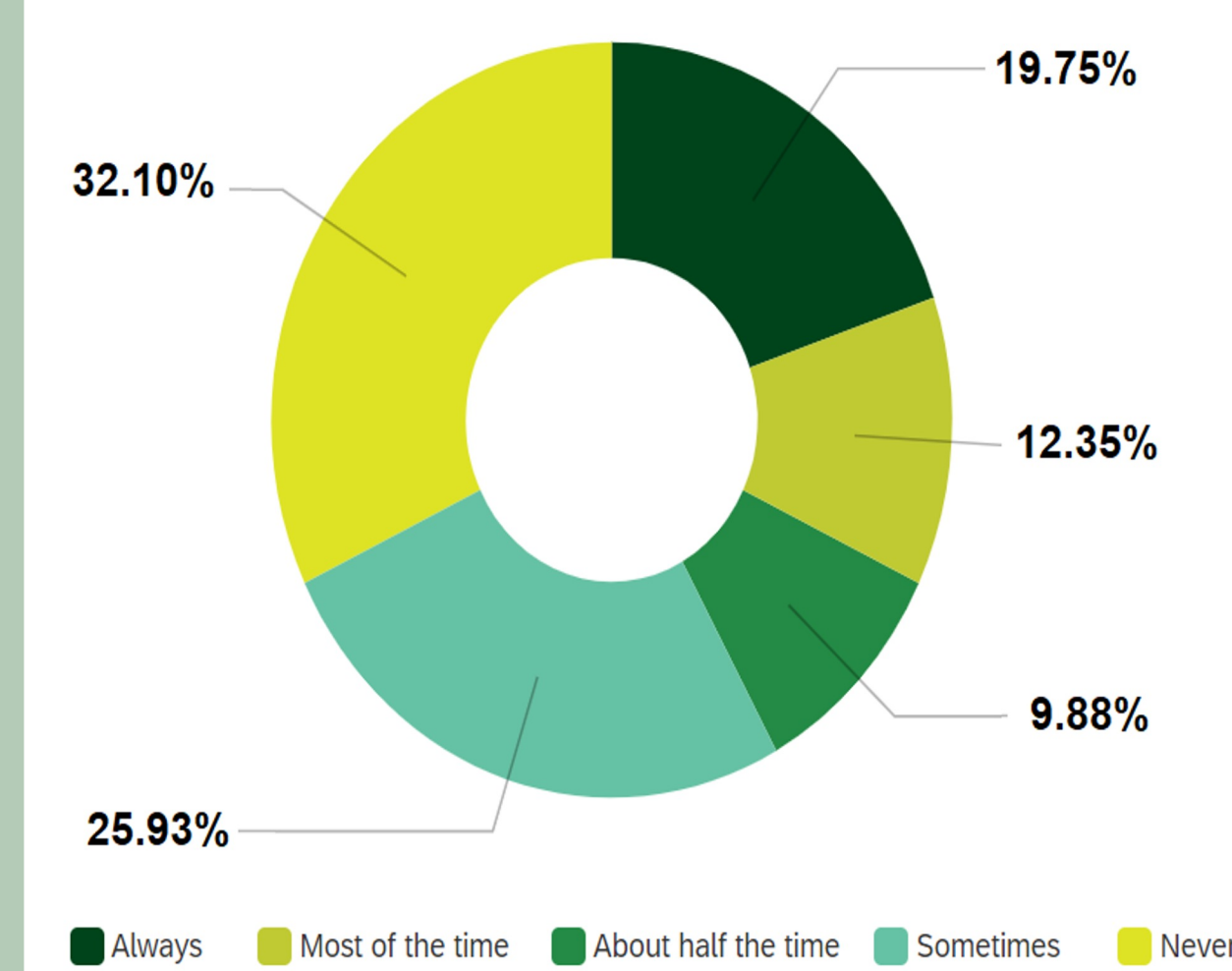


Figure 3: Muslims who observe Ramadan may take which of the following medications?

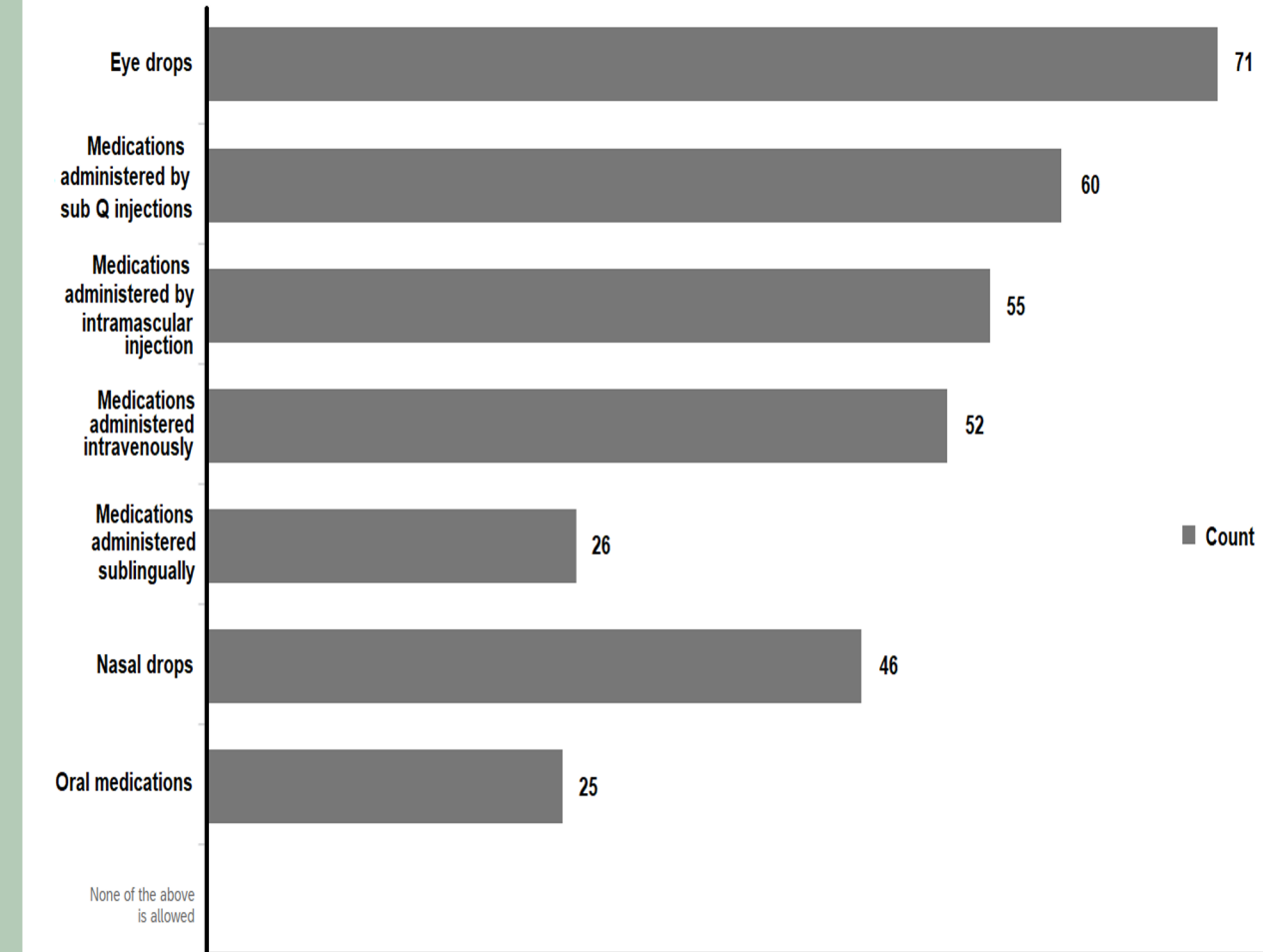
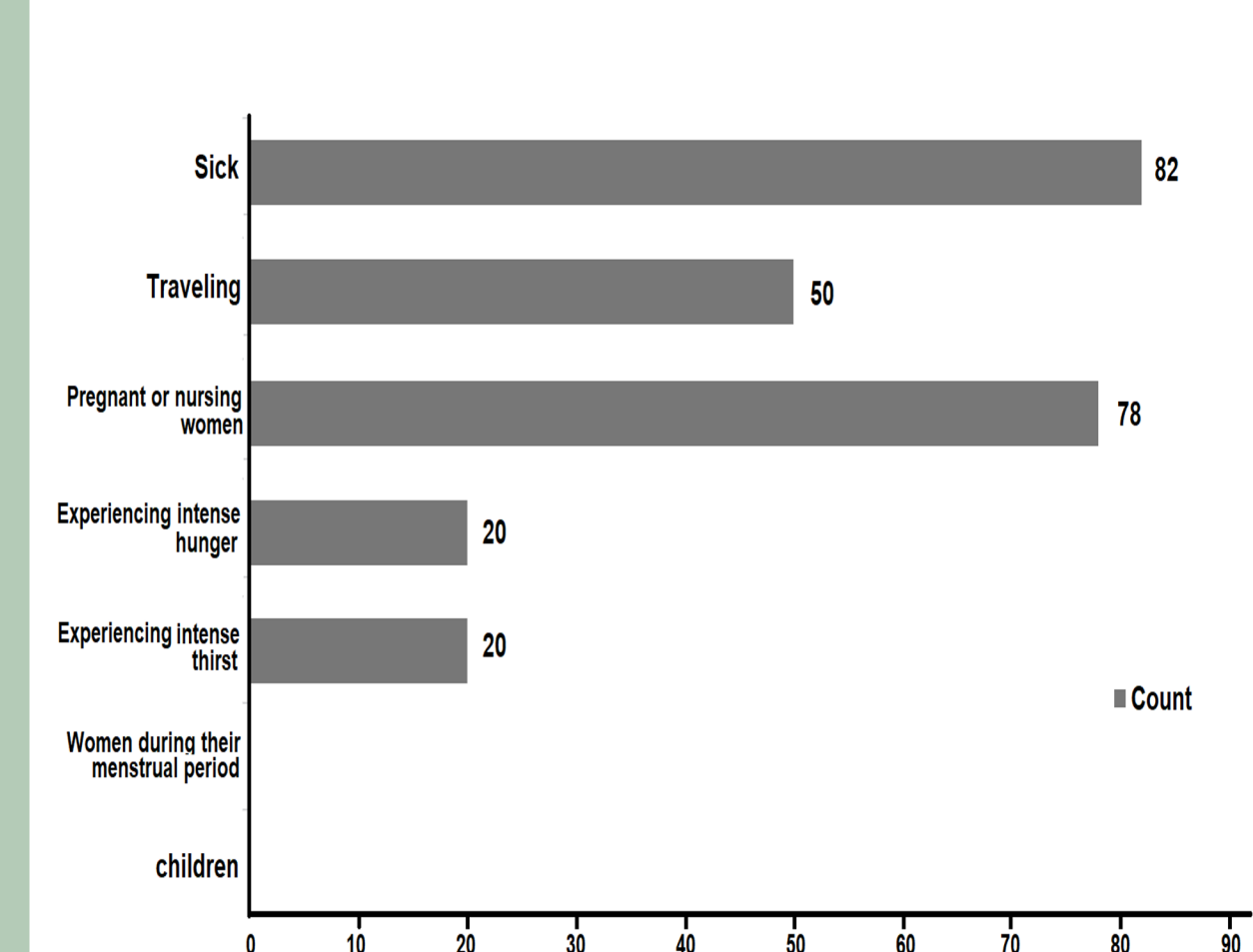


Figure 4: Religiously, which of the following individuals are excused from fasting people?



## AIM

**Create educational modules based on published guidelines to close knowledge gaps and improve patient care for Muslims with diabetes who fast during Ramadan.**



## METHODS

- We intend to develop four case studies, each based on different patient profiles and risk categories (low risk, medium risk, high risk and very high risk).
- Using case-based learning and strategic questions, we will present information that can apply to real life patients.
- Questions will encourage inclusive patient interviewing to:
  - identify Muslim patients who fast
  - assess diabetic risk level
  - apply established recommendations
  - provide education to prevent complications
- Cases will also provide general education about Ramadan and fasting, e.g.
  - when do Muslims begin fasting
  - who is religiously exempt from fasting
  - what types of medications are permissible during the fast
  - which medications invalidate the fast

## RESULTS

- Once our educational modules have been developed, we plan to make them available to medical students during the M3 orientation as well as residents in Internal Medicine.
- This curriculum will establish and build upon medical student and physician resident knowledge, skills, attitudes, and confidence in providing care and recommendations to Muslim patients with diabetes who fast during Ramadan.
- Efficacy of our educational curriculum will be assessed with pre- and post-questionnaires using short cases addressing the specific learning objectives for each module and Likert-style questions to assess attitudes and confidence.

## DISCUSSION

- To our knowledge, this was the first study conducted in the USA to shed light on medical students and resident physicians' knowledge, perceptions, and comfort level in diabetes management during the month of Ramadan.
- Our survey showed, only about one third of our trainees were able to answer basic questions about when observant Muslims begin to fast. In contrast to the Canadian study, most of our trainees were comfortable caring for patients who fast even though that less than one half follow specific guidelines.
- Our educational modules will: provide strategies to approach patients regarding fasting, assess their diabetic risk level (below), and provide appropriate recommendations to patients with T2D who fast during Ramadan.
  - Low-risk:** no complications, HbA1c < 7%, **may choose to fast**
  - Medium-risk:** no complications, HbA1c < 8%, uses oral medications/short-acting insulin, **may choose to fast with caution**
  - High-risk:** some complications or comorbidities, HbA1c 8%-10%, uses short- or long-acting insulin, elderly (>75 y.o.), **may choose not to fast**
  - Very high risk:** Acute illness, pregnant, or on chronic dialysis. Severe hypoglycemia or DKA within 3 months, HbA1c >10%, **fasting not recommended**
- Based off these risk profiles, our modules will provide consultation about the risk of fasting and medical recommendations using peer-reviewed guidelines.

## CONCLUSION

- Our survey results suggest that many medical students and resident physicians lack adequate knowledge and training on managing Muslims fasting in Ramadan, particularly in the proper adjustment of medications and in diabetes management for fasting patients.
- There is a need for better physician training, future research, and more educational resources to address this knowledge gap.
- Using educational modules, we hope to improve the knowledge, skills, attitudes, and confidence of students in managing their patients with diabetes who fast during Ramadan with the long-term goal of improving the quality of care for patients within this demographic.

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