

Next-generation wearable sensors for type 1 diabetes: between the promise of customization and technological limitations

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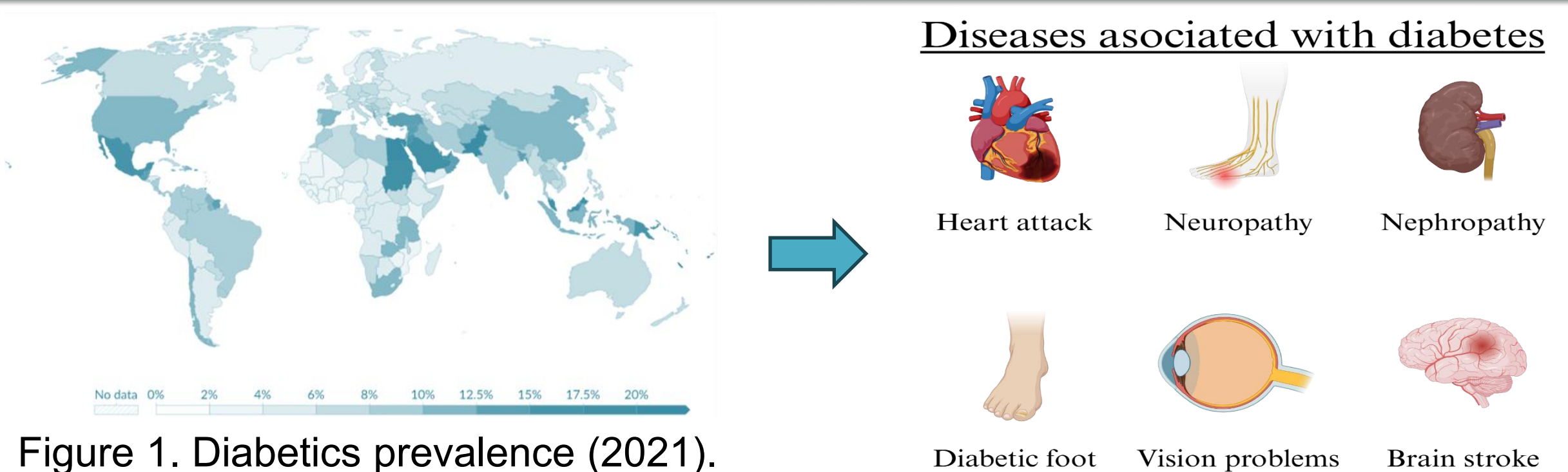
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INTRODUCTION & AIM

Type 1 diabetes requires precise and continuous glucose control. Recently, wearable glucose sensors have evolved into sophisticated tools that integrate multiple physiological variables via AI and novel monitoring techniques.



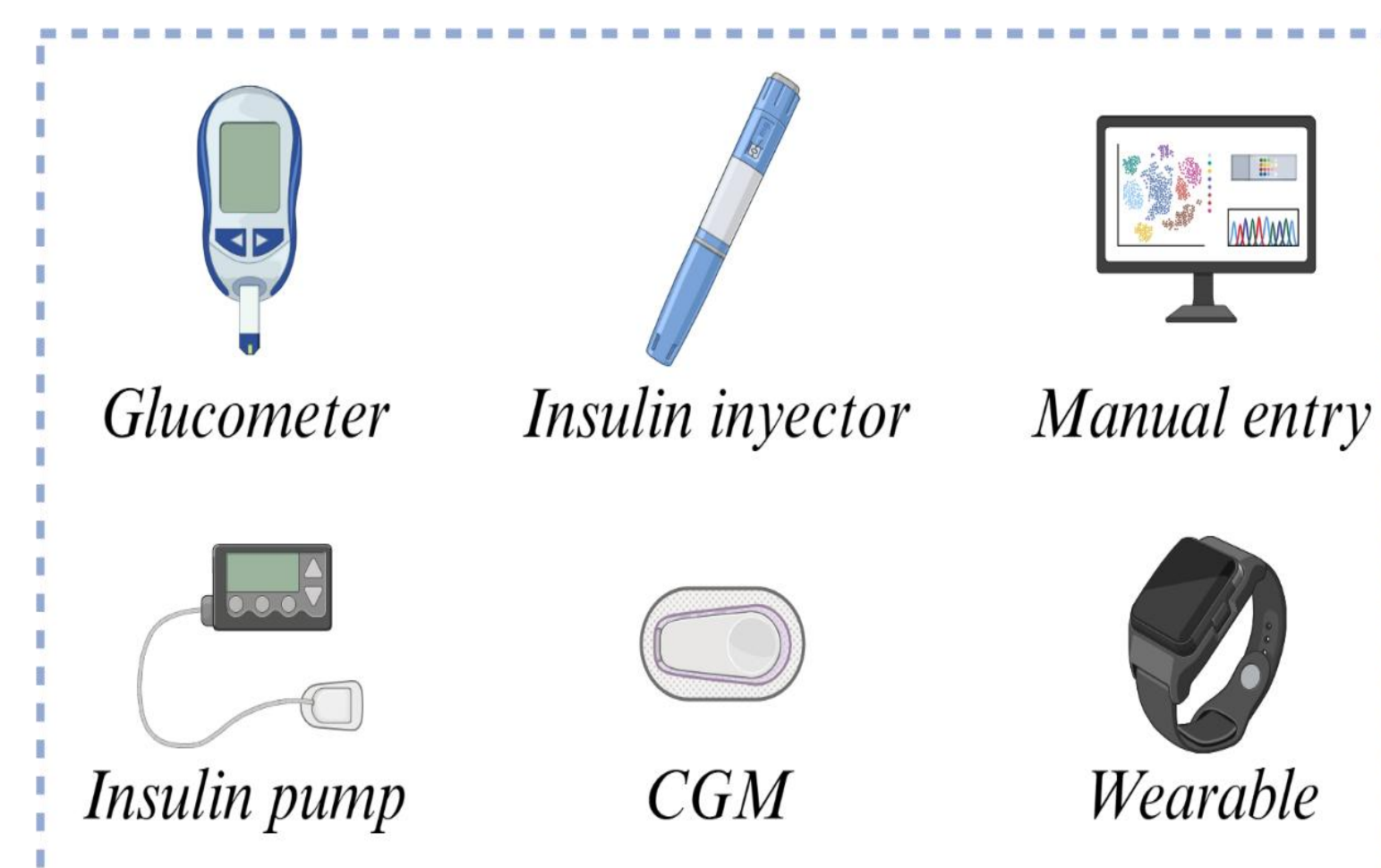
METHOD

REACTIVE APPROACHES



VS

PERSONALIZED PREDICTIVE MODELS



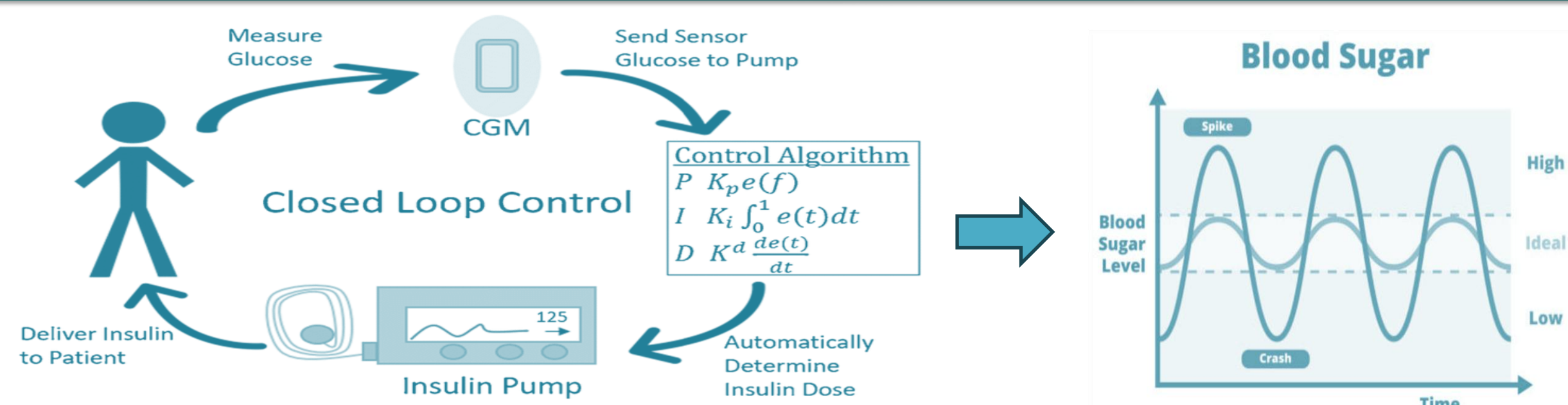
Optimized glycemic control by leveraging real-time contextual variables.



Figure 2. Actual equipments for diabetic patients.

RESULTS & DISCUSSION

AI emulate pancreatic function, hence the term “artificial pancreas.” Nevertheless, challenges remain regarding response latency, device interoperability, and adaptability to abrupt physiological changes.



CONCLUSION

In conclusion, WGS are redefining T1D healthcare through more dynamic and patient-centered approaches. However, successful implementation demands balancing technological innovation, rigorous validation, ethical data management, and human-centered design. Future studies must also evaluate the effects of intensive device use, as prolonged reliance may cause information fatigue, alert overdependence, and increased anxiety, especially in pediatric or emotionally vulnerable patients.

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