

Effect of innovative tools for diabetes self-management education on glycaemic control in diabetes melitus patient at Klinik Kesihatan Beruas, Perak

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Track: Diseases of Skin / Other NCDs

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ABSTRACT

Introduction: Diabetes mellitus is a major contributor to non-communicable disease (NCD) morbidity in Malaysia. Although structured diabetes self-management education (DSME) has been shown to improve outcomes, routine practice often lacks practical and standardized tools to support effective self-care. This study aimed to develop and evaluate a four-component DSME model incorporating innovative, user-friendly tools to enhance patient education, empower healthcare providers, and improve glycaemic control in primary care. **Materials and Methods:** Four innovative tools were introduced as part of structured DSME at Klinik Kesihatan Beruas, Perak. For providers, the Diabetes Assessment Form supported systematic evaluation of adherence, self-monitoring blood glucose (SMBG), and injection technique, while the Education Checklist ensured consistent counselling on lifestyle, medication, foot care, and complication prevention. For patients, the Hypoglycaemia Kit provided fast-acting carbohydrates with clear instructions for immediate response, and the Education Booklet offered practical guidance on insulin use, diet, hypoglycaemia care, and daily SMBG recording. Implemented over six months, these tools were evaluated using pre- and post-intervention HbA1c, analysed by the Wilcoxon signed-rank test, which showed significant improvement (p -value < 0.05). **Results:** A significant median reduction of 0.65 % in HbA1c was recorded among 26 patients after implementation of the tools ($Z = -2.19$; 95% CI: -1.20 to -0.05 ; p -value = 0.029). The intervention demonstrated a moderate effect size ($r = 0.43$), indicating meaningful improvement in glycaemic control. The tools increased patient confidence and provider effectiveness. The hypoglycaemia kit supported safe self-management, reducing emergency visits. The assessment form and checklist improved counselling, SMBG, and medication adherence, while the education booklet strengthened knowledge, caregiver support, and reduced anxiety. **Conclusion:** This four-component DSME model offers a practical and scalable approach in primary care, equipping healthcare workers and patients with effective tools to strengthen self-management, enhance safety, and help reduce the burden of diabetes.

Keywords: Diabetes Education, DSME, Innovation, NCD Prevention, Health Education