PP 04

IMPROVING THE PERCENTAGE OF PREDIABETICS ACHIEVING NORMOGLYCAEMIA AMONG PATIENTS IN KK PETALING BAHAGIA

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INTRODUCTION

According to National Health Morbidity Survey 2023, 15.6% or 1 in 6 adults in Malaysia has type 2 diabetes (T2DM) and 5.9% do not know that they have them[1]. Developing strategies for early interventions, treat prediabetes and prevent the progression to overt diabetes, along with subsequent cardiovascular and microvascular complications, is therefore crucial. WHO defined prediabetes as a state of intermediate hyperglycemia using two specific parameters which is impaired fasting glucose (IFG) of 6.1-6.9mmol/L , impaired glucose tolerance (IGT) of 7.8-11mmol/L after ingestion of oral glucose load.[2] Malaysian T2DM Clinical Practice Guidelines (CPG) align with these criteria but add an HbA1c range of 5.7%–6.2% for prediabetes, with normoglycemia defined as HbA1c below 5.7%. [6]

1.0 SELECTION OF OPPORTUNITIES FOR IMPROVEMENT

The MOGC Diabetes audit 2021 by the Non-communicable disease (NCD) unit of the Kuala Lumpur State Health Department revealed poor management of prediabetes patients at KKPB. This finding was corroborated by a baseline survey in October 2022, which indicated that only 15% of prediabetes patients in KKPB had HbA1c levels <5.7%. This study aimed to raise the proportion of individuals achieving HbA1c levels below 5.7% eventually reversing to a state of normoglycemia .

1.1 REASON OF CHOOSING THIS TOPIC

- **SERIOUSNESS**
  - Prediabetes is an important risk for progression of diabetes and cardiovascular diseases.
  - It is a potentially reversible condition with early detection and timely intervention.
- **MEASURABLE**
  - Patient's medical records to see HbA1c percentage of prediabetes patients.
- **APPROPRIATE**
  - Intervention available to delay and prevent progression to overt diabetes and CV risk.
- **REMEDIABLE**
  - Can be implemented with existing resources and expertise available.
- **TIMELINESS**
  - 1 year.

1.2 LITERATURE REVIEW

- A recent meta-analysis on prevalence of type-2 diabetes (T2DM) and prediabetes in Malaysia revealed the overall pooled estimate prevalence of prediabetes was 11.62% (95% CI, 7.17%–16.97%).[3]
- According to American Diabetes Association expert panel, up to 70% of individuals with prediabetes will eventually have diabetes and if current trends continue, 1 in 3 adults will have diabetes by 2050.[4]
- The relative risk of diabetes was 20 times higher if the HbA1c was greater than or equal to 6% compared with an HbA1c of 5% or less.[5]
- Lifestyle intervention strategy such as weight loss (7% of body weight) and moderate physical activity (150 minutes per week) has been proven to reduce the risk of progression to T2DM.[6]
- A randomised control trial among 799 Korean prediabetics found incidence of reversion from prediabetes to normoglycemia after one year was 37.9% (95% CI, 32.6–43.1%) in the intensive lifestyle intervention group compared to 29.6% (95% CI, 24.5–34.7%) in the control group.[7]

1.3 PROBLEM STATEMENT

PROBLEM

There is low percentage of prediabetes patients with HbA1C reversal to normoglycaemia at Petaling Bahagia Health clinic. A baseline study conducted in October 2022 found that only 15% of prediabetes patients in KKPB have Hba1c of <5.7% at follow up.

EFFECTS

Progression to overt diabetes and its complications . Increasing healthcare cost and burden.

THE POSSIBLE CAUSES

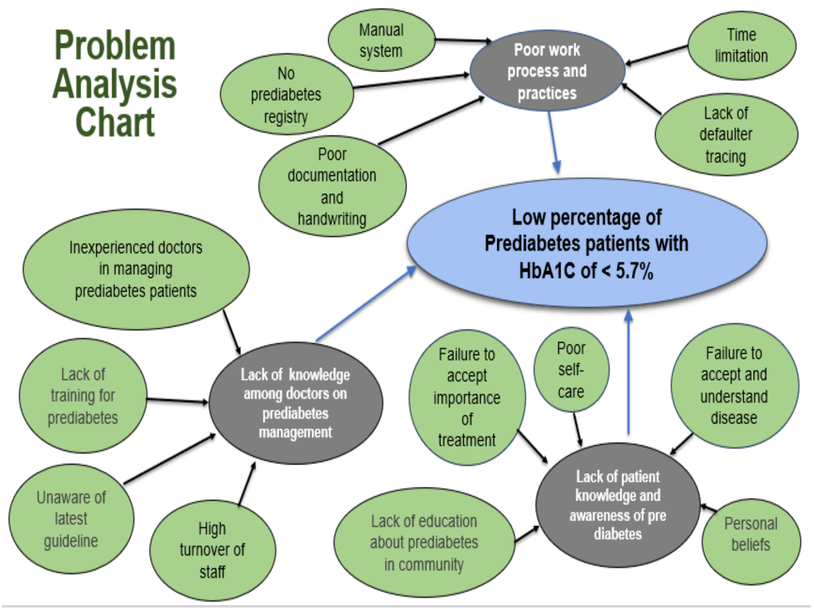
Multiple factors including poor knowledge, practice and lack of training on the management of prediabetes patients. It is also possible due to inadequate awareness and knowledge among prediabetes patients.

THE AIMS OF STUDY

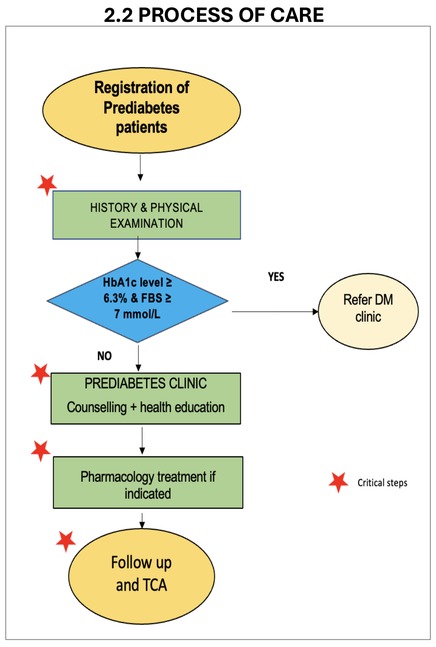
To improve the work process and management of prediabetes to achieve a better percentage of prediabetes patients with HbA1c of less than 5.7% (normoglyacaemia).

2.0 KEY MEASURES OF IMPROVEMENT

2.1 CAUSE EFFECT ANALYSIS



2.2 PROCESS OF CARE



2.3 GENERAL & SPECIFIC OBJECTIVES

General objective

- To increase the % of prediabetes patients to normoglycemia (Hba1c < 5.7%)

Specific objective

- To measure the % of prediabetes patients with HbA1c <5.7% (Normoglycemia)
- To identify and verify the contributing factors
- To formulate and implement appropriate remedial measures.
- To evaluate the effectiveness of the remedial measures

2.4 INDICATOR AND STANDARD

INDICATOR	FORMULA	STANDARD
% Prediabetes patients with HbA1c <5.7%	No. Prediabetes patients with HbA1c <5.7% / Total no of Pre DM patients	35%

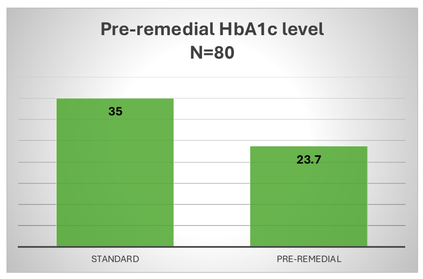
2.5 MODEL OF GOOD CARE

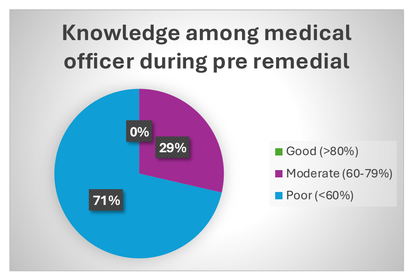
No	Critical Steps	Criteria	Standard	Pre remedial	Cycle 1
1	History & physical examination	All prediabetic patient should have ✓ Thorough history and problem listing ✓ Physical examination includes weight, height ,BMI, vital signs and DXT	 100% 100%	 50% 50%	 100% 100%
2	Counselling and health education	✓ To make sure motivation & counselling for prediabetes care is given and reinforced during each visit. ✓ Diet advice/dietician referral ✓ Exercise and weight reduction advice/Physio referral	100% 100% 100%	20% 20% 20%	100% 100% 100%
3	Pharmacological treatment	✓ Appropriate treatment. All pharmacological intervention should follow DM CPG	100%	0%	100%
4	Follow up process	✓ OGTT/HBA1c done 6 months to yearly ✓ Appropriate appointment given ✓ All prediabetes patient registered in Registry ✓ All defaulter identified and traced within 2 weeks	100% 100% 100% 100%	40% 50% 0% 0%	100 % 100% 100% 80%

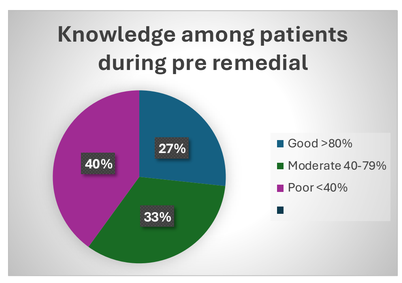
3. PROCESS OF GATHERING INFORMATION

STUDY DESIGN	CROSS SECTIONAL
STUDY PERIOD	Verification study : October 2022 Pre remedial study : 1 January 2023 - 30 January 2023 Post remedial study : Cycle 1 November 2023 to 31 December 2023
SAMPLING TOOL	- Patient's medical records - Self administered questionnaire for medical officer and patient - Clinical audit checklists
SAMPLING METHOD	- MO: Universal sampling - Patient : Convenient sampling
INCLUSION CRITERIA	- Active patients who come for appointment for the past 6 months - Agreed to be contacted by WhatsApp application
EXCLUSION CRITERIA	- Transfer-out patients - Foreigners and pregnant women - Defaulter after 3 reminders

4.0 ANALYSIS AND INTERPRETATION





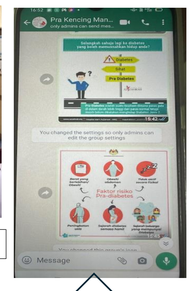


- During the pre-remedial study, only 23.7% of prediabetes patients had HbA1c levels of <5.7%. The ABNA was 11.3%.
- There was poor knowledge of prediabetes among medical officers (71.4%) and patient (40%) initially.
- Clinical chart audit also revealed poor documentation, inappropriate diagnosis and interpretation of result and inadequate management of prediabetes.

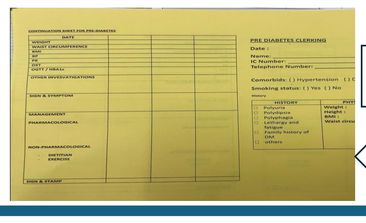
5.0 STRATEGIES FOR CHANGE

NO	REMEDIAL ACTIONS AND INTERVENTIONS	BRIEF OF INTERVENTION CONDUCTED	CONTRIBUTING FACTOR(S) ADDRESSED BY THE INTERVENTION
1)	Prediabetes registry and appointment system	A prediabetes registry was created , initially created manually then changed to virtual platform (google form) for team members to access registry data easily. This registry also enables us to track defaulter and manage them.	-Poor practice and work process -Lack of defaulter tracing -No registry
2)	CME and sharing information	CME sessions were held for all medical officers and paramedics. Regular WhatsApp group reminder to MO regarding Prediabetes clinic.	-Lack of knowledge on prediabetes and management
3)	Prediabetes clerking template	A clerking template was created to assist MO for better practice and management of prediabetes	-Poor documentation and handwriting -Time limitation
4)	Individual and group counselling and health education for patients	Counselling and health education was given during prediabetes reversal clinic. The clinic consist of MO, dietitian and physiotherapist . WhatsApp group was created among patients where factsheet/info graphics shared .	-Lack of knowledge and awareness among patient
5)	NCD Day	Hari NCD in October 2023 to create more awareness.	-Lack of knowledge and awareness among patient in community

INTERVENTION 2: CME FOR MEDICAL STAFFS



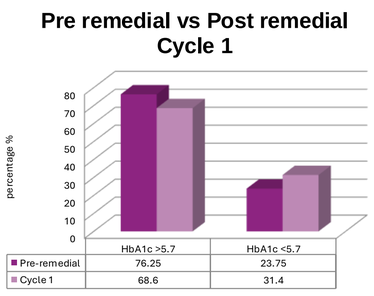
WhatsApp Group for health education

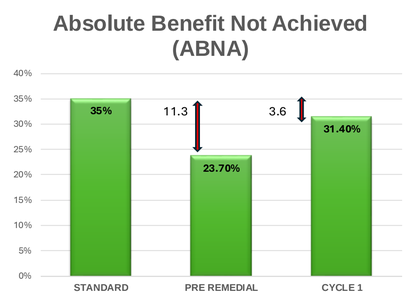


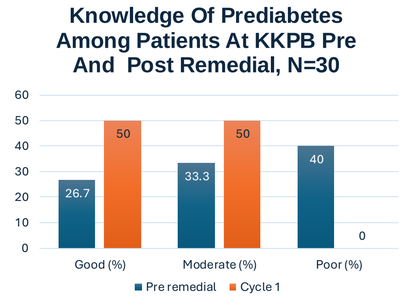
Intervention 3: Prediabetes clerking template

Intervention 5: An open day to celebrate non-communicable diseases with the objective of raising awareness among patient and community regarding importance of healthy lifestyle modification.

6.0 EFFECTS OF CHANGE

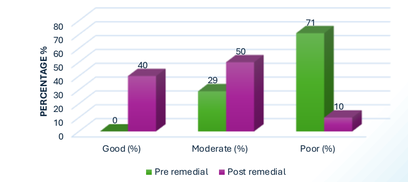






6. 1 SUMMARY AND LESSON LEARNT

- The percentage of prediabetes patients with reversal to normoglycemia increased from 23.7% to 31.4% during the first assessment cycle. The ABNA reduced from 11.3 to 3.6.
- Our remedial strategies proves to increase the percentage of prediabetes to normoglycemia with involvement of multidisciplinary team (MDT). Reversal to normoglycemia can be achieved with proper guidance on prediabetes and lifestyle modification among patient.
- Recognising and early intervention of prediabetes will prevent development of overt diabetes and its complications, thereby reducing the cost of treating overt diabetes several years later.



7.0 THE NEXT STEPS

- To do second audit cycle by November- December 2024.
- To improvise and update digital online prediabetes registry.
- To develop quick reference code to provide online education on prediabetes for patients and extend prediabetes reversal clinic to all patients and involving all medical officers.
- To share our study outcome and remedial action with other clinics.

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