NHS Greater Glasgow & Clyde	**Paper No. 23/94**
Meeting:	**NHSGGC Board Meeting**
Meeting Date:	**19 December 2023**
Title:	**Obesity Prevention and Early Intervention for Type 2 Diabetes (T2DM) Update**
Sponsoring Director/Manager	**Dr Emilia Crighton, Director of Public Health**
Report Author:	**Anna Baxendale, Head of Health Improvement & Inequalities** **Linda Morris, PH Programme Manager**

1. Purpose

The purpose of the attached paper is to:

- Update the board on key aspects of Obesity and Prevention and Early Intervention for Type 2 Diabetes (T2DM) within GGC.

2. Executive Summary

Prevention of overweight and obesity within the population requires multi-level action; working at a societal level to address the obesogenic environment; adopting a life stage approach whereby interventions are tailored to different age groups, as well as providing a comprehensive approach to weight maintenance, weight management and supported lifestyle changes to address the chronic relapsing nature of the condition.

- Levels of overweight and obesity continue to rise in the child and adolescent population with levels of obesity in children overtaking levels of overweight in the most deprived communities.
- Two thirds of all adults across NHSGGC are overweight and obese, with over half of all pregnant women being in the overweight or obese category at the start of their pregnancy.

The prevalence of T2DM continues to steadily increase across Scotland and locally. Across NHSGGC, there are 66,677 patients diagnosed with T2DM and treatment for people with T2DM has significant cost at around 9% of the NHS budget.

Diagnosis has increased post pandemic, with approximately 400 newly diagnosed patients monthly. Diabetes is closely related to deprivation and ethnic background and whilst 5.5% of the NHSGGC population are currently diagnosed, estimates suggest significant unmet need with prevalence is closer to 10%. Obesity is the biggest driver of

T2DM and a combination of structured education and weight management interventions are effective in improved management of the condition, delaying or avoiding complications and in an increasing number of cases supporting disease remission.

To address the impact of obesity within our population, our five priorities are:

- Universal delivery of HENRY to families with pre-five children
- Delivery of tailored Weight Management Services for adolescents (Weigh to Go)
- Development of robust local Community Food Networks to build community capacity; cookery skills and food literacy and reduce food insecurity for vulnerable families including Thrive into 5.
- Provision of weight management services at a size and scale to impact across the population and address clinical need.
- Provide early intervention education and weight management interventions to newly diagnosed patients with T2DM or Gestational Diabetes with a view to increasing remission rates.

3. Recommendations

The NHSGGC Board is asked to consider the following recommendations:

- Advocate for the 5 priority areas of action on obesity.
- Support and maintain investment in the 5 priority areas described.

4. Response Required

This paper is presented for **awareness**

5. Impact Assessment

The impact of this paper on NHSGGC's corporate aims, approach to equality and diversity and environmental impact are assessed as follows:

- **Better Health** **Positive impact**
- **Better Care** **Positive impact**
- **Better Value** **Positive impact**
- **Better Workplace** **Neutral impact**
- **Equality & Diversity** **Positive impact**
- **Environment** **Neutral impact**

6. Engagement & Communications

The issues addressed in this paper were subject to the following engagement and communications activity:

- The paper describes a range of stakeholder engagement programmes and discrete activities have been informed by wider service partners and user engagement/ participation.
- Governance for this programme of activity is through Public Health and Inequalities Group and T2DM Executive Group & Programme Board. Scottish Government reporting requirements are overseen by Director of Public Health.

This paper has been previously considered by the following groups as part of its development:

- Informal Directors Group
- Public Health Inequalities Group
- Child and Maternal Services Co-ordinating Group / HoCs – in part
- T2DM Exec Group – in part
- Public Health Senior Management Team
- Corporate Management Team
- Population Health and Wellbeing Committee

7. Date Prepared & Issued

Date Prepared: 12 September 2023

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1. Introduction

1.1 This paper reports on the progress of the prevention and early intervention work stream of the Scottish Government: 'A Healthier Future: Diet & Healthy Weight Delivery Plan and Type 2 Diabetes Prevention, Early Detection and Intervention frameworks and provides an update on key programmes of work and areas under development for the coming year.

1.2 Levels of overweight and obesity are continuing to rise across Scotland and whilst this affects over 2/3rds of adults across GGC, the problem begins in early childhood.

1.3 In NHSGGC, by the time children reach primary 1, a quarter of children are already overweight and obese. By the time young people are becoming young adults, 30% of 16-24 year olds being overweight and obese[1]. A combination of poor diet, sedentary lifestyles, and food insecurity all contribute to the rising trend of overweight and obesity across the generations.

1.4 Adult overweight and obesity now affects just over 2/3rds of the population, with the annual full costs estimated to be £5.3 billion, which corresponds to 3% of Scotland's 2022 GDP[2]

1.5 Diabetes has an annual cost to NHS Scotland of around £1billion each year. Around a fifth of all inpatients to hospital have diabetes and diabetes medications account for around 8% of primary care medicines costs in Scotland[3].

1.6 Prevention of T2DM is dependent on early intervention to reduce overweight and obesity across the population. Adiposity now accounts for more deaths in Scotland than smoking[4]

2. Background

Child and Adult Overweight and Obesity

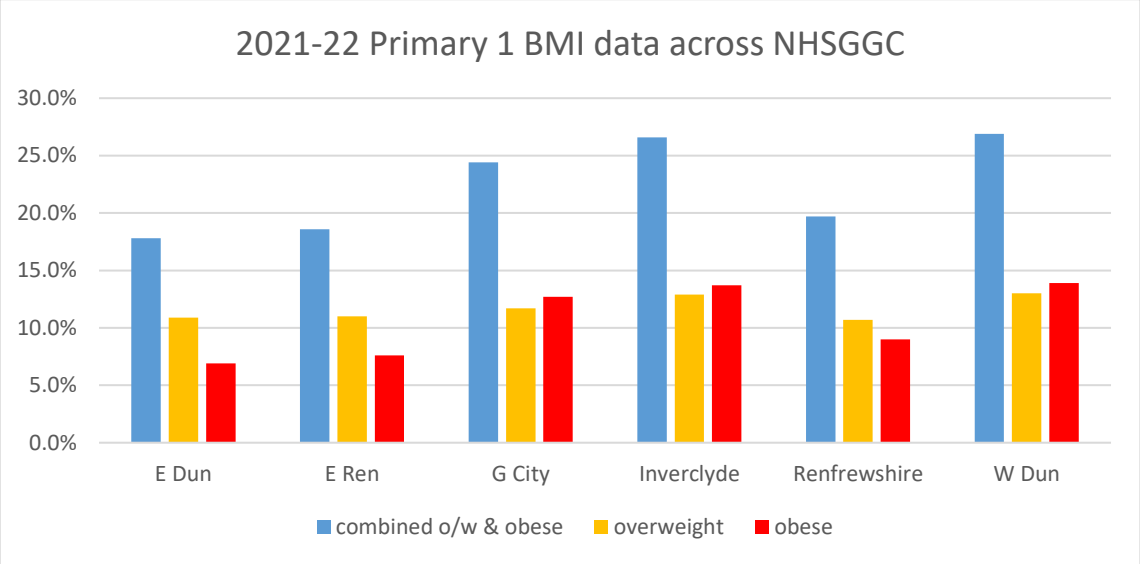
2.1 Since writing the last report, childhood overweight and obesity, which spiked during the pandemic, has now come down to pre-pandemic levels. Whilst this is encouraging, in-depth analysis of the data highlights that although the combined rate of overweight/obesity has regressed to the pre-pandemic level, in the most deprived communities, there has been a rise in the level of children who are obese relative to those who are overweight.

2.2 Data gathered by Health Visitors as part of the Universal Pathway during 2021-22 demonstrates that 33% of children aged 27-30 months were overweight and or obese, indicating that unhealthy weight begins in the early years. Whilst a sizeable number of children will grow into their weight, there are a significant proportion who will continue to be overweight and or obese as they grow.

2.3 Data from the Primary 1 child health surveillance system[5] highlights the rising trend in overweight and obesity for children between 2011/12 to 2021/22 (table 1), with socio-economic gradients evident in graph 1.

	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22
NHS Greater Glasgow & Clyde											
Number of children measured	10,951	11,493	11,528	11,622	10,878	10,521	11,354	8,598	x	6,806	10,081
Number at risk of underweight	102	140	141	171	126	119	127	71	x	46	149
% at risk of underweight	0.9%	1.2%	1.2%	1.5%	1.2%	1.1%	1.1%	0.8%	x	0.7%	1.5%
Number of healthy weight (epidemiological)	8,497	8,960	9,004	9,096	8,480	8,124	8,802	6,616	x	4,801	7,644
% healthy weight (epidemiological)	77.6%	78.0%	78.1%	78.3%	78.0%	77.2%	77.5%	76.9%	x	70.5%	75.8%
Number at risk of overweight	1,267	1,317	1,308	1,324	1,218	1,207	1,336	1,014	x	946	1,167
% at risk of overweight	11.6%	11.5%	11.3%	11.4%	11.2%	11.5%	11.8%	11.8%	x	13.9%	11.6%
Number at risk of obesity	1,085	1,076	1,075	1,031	1,054	1,071	1,089	897	x	1,013	1,121
% at risk of obesity	9.9%	9.4%	9.3%	8.9%	9.7%	10.2%	9.6%	10.4%	x	14.9%	11.1%
Number at risk of overweight and obesity combined	2,352	2,393	2,383	2,355	2,272	2,278	2,425	1,911	x	1,959	2,288
% at risk of overweight and obesity combined	21.5%	20.8%	20.7%	20.3%	20.9%	21.7%	21.4%	22.2%	x	28.8%	22.7%

Table 1: Scottish Government Child Health Surveillance; P1 Body Mass Index Statistics 2008–2021



Graph 1: Primary 1 BMI data across NHSGGC by locality planning area

2.4 Recognising that overweight and obesity begins early, NHSGGC child healthy weight strategy approved in 2016, advocates for a life stage approach to prevention.

2.5 A systematic review of evidence highlights that around 55% of obese children go on to be obese in adolescence, and around 80% of obese adolescents will still be obese into adulthood. Therefore, the strategic approach adopted by NHSGGC is 2-fold:

- Intervention to support families to adopt healthy eating, increase physical activity and reduce impact of food insecurity through awareness raising, skills development, practical support and access to affordable foods for families,
- Targeted intervention to engage overweight adolescents in weight management support – as an effective and efficient strategy in reducing adult overweight[6].

Early Years:

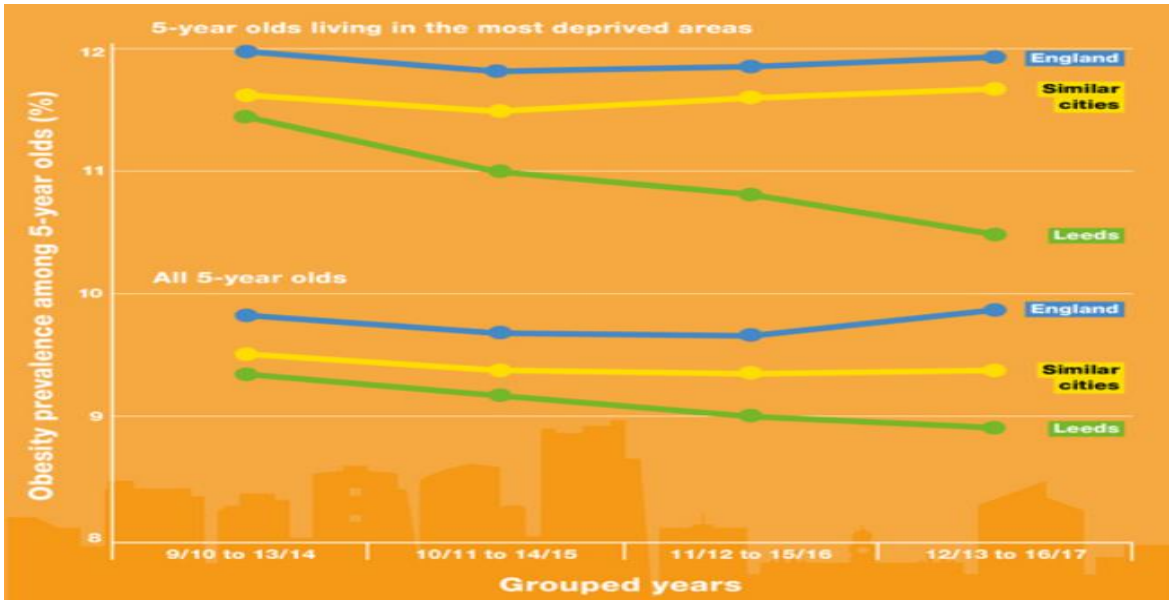
2.6 Evidence highlights that focussing intervention on the early years is important and by adopting a universal support within the core Health Visiting/ Family Nurse Partnership programmes we aim to address:

- the foundations of every aspect of human development (physical, social and behavioural) begin in early childhood
- children growing up in poorer areas are more likely to experience inadequate nutrition, obesity and tooth decay
- Obesity affects children throughout their lives and disproportionately affects children from more deprived communities.
- Inequality is not inevitable and is preventable

2.7 Since 2008, Leeds City Council have invested in a childhood obesity strategy with the delivery of the HENRY programme at its core. All health & early years practitioners have been trained by HENRY to support families to adopt healthier

lifestyles and rigorous evaluation over 10 years has shown that it is possible to reduce levels of childhood obesity significantly[7].

2.8 Across Leeds, HENRY has demonstrated positive impact at population level, where the prevalence of obesity has fallen significantly (9.4% to 8.8%), whilst comparable cities and England as a whole, showed no change[8]. In addition, the impact of the programme has been greater for children living in the most deprived areas, contributing to a reduction in health inequalities (graph 2).

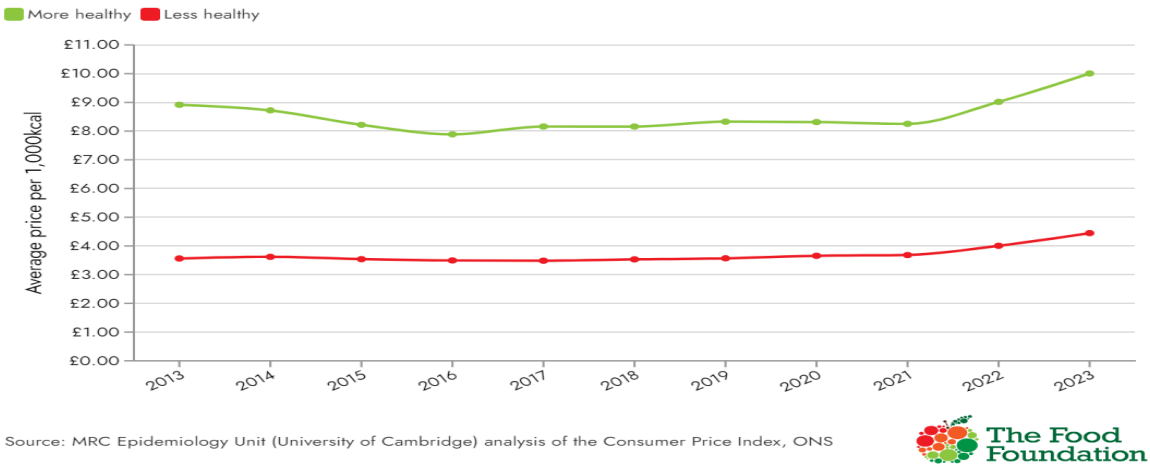


Graph 2: Observational analysis of HENRY programme in Leeds

2.9 NHSGGC comprises 6 local authority areas, of which three are in the top 5 most deprived areas in Scotland by SIMD. Replicating the population impact in Leeds is the desired aim for the GGC child healthy weight strategy and resources have been invested to implement the HENRY programme as part of the universal Health Visiting and Family Nurse programmes across GGC.

2.10 By the end of March 2024, 200 staff providing local childrens services will have been trained, comprising child and family teams, Third Sector Organisations delivering childrens services / child development and education partners. Building on this multi-disciplinary momentum a GGC Training for Trainers approach is being adopted to sustain training longer term and enable the commissioning of local HENRY Families Growing Up programmes to provide additional targeted support for those families with greatest need.

2.11 High poverty rates result in more families experiencing food insecurity which in turn presents a challenge to providing a healthy diet; healthy foods being three times more expensive than unhealthy foods[9] (graph 3).



Graph 3: Average price of food and drink by Nutrient Profile Modelling

2.12 Recognising the impact that food insecurity has on a healthy diet, additional resources have supported the development and delivery of a whole system pilot approach, Thrive under 5.

2.13 Targeted clinical support for those children identified with more complex overweight/obesity issues e.g. autistic spectrum, fussy/faddy eating, Prader-Willi, presence of co-morbidity etc., is provided on referral pathway by either Community Dietetics or specialist paediatric services.

Adolescents:

2.14 Older children / Young people who are overweight or obese are likely to go on to be overweight and obese adults. Children and adolescents living with obesity experience breathing difficulties, increased risk of fractures, hypertension, early markers of cardiovascular disease, insulin resistance, T2DM, and psychological effects[10]

2.15 Targeted weight management services, Weigh to Go (WtG), support young people (aged 12-18 years), to lose weight and adopt a healthier lifestyle are provided in the context of wrap around support.

2.16 By taking a population approach to child and adolescent overweight and obesity, support can be matched to the age and stage of child's development allowing interventions to be delivered at the size and scale required across GGC. This requires a combination of universal support alongside the delivery of targeted services; recognising that for the majority of younger children a healthy eating and activity focus effectively allows 'children to grow into their weight' rather than interventions seeking to achieve weight loss.

2.17 An important element of the approach is building community capacity for food literacy and cooking skills to enable long term change to eating habits and increase access to affordable healthy foods including Best Start benefits. This is described as our Community Food Network with links to Local Food Plans.

2.18 Table 2 details the range of programmes currently delivered.

Tier	Initiative	Activity	Age	Locality	Comment
1	Your Body Matters	Primary education resource aligned to C4E outcomes	5 - 12	GG&C	Resource revised and re-launched May 2023
	Community Food Network	Community Cooking; Food literacy sessions; equipment support; Pantry memberships	Families	GG&C	Local TSO partnerships
2	Growth and Nutrition Advisory Service	Professional advisory service to C&F teams for children <12 months with growth concerns.	0-12m	GGC	Service pathways in development
	Thrive under 5	Pilot programme in communities. Aimed at reducing food insecurity whilst increasing healthy food availability (& purchasing power) and reducing food miles to maximise opportunities for children to have a healthy diet and be physically active	0 - 5	Glasgow & Inverclyde	SG Additional funding 2021, 2022 and 2023 with possibility of further award 2024
	HENRY	EY settings approach delivered through the universal pathway. Training being rolled out to HVs, SNs, Children & Families Teams and EY Educations staff to deliver universal approach	0 - 5	GG&C	Training roll out began Jan 2023
	HENRY Healthy Families Growing Up	HENRY training being offered to education staff, SNs and TSOs.	5 - 12	GG&C	Training roll out underway
	Community Dietetics	Children with complex need being referred to community dietetics on a 1:1 basis	5 - 12	GG&C	Service active across all areas
	Weigh to Go	GHSCP YHS support for YP to access commercial weight management services	12-18	GG&C xs 16 venues	Service active across all areas
3	Specialist Services	Currently provided through Paediatric services	N/A	GG&C	N/A

Table 2: CHW Programme activity across NHSGGC (by tier)

3. Adult Overweight and Obesity

3.1 A recent report commissioned by NESTA reported that the annual full costs of obesity across Scotland are £5.3 billion[11]

3.2 A recent report by Obesity Action Scotland highlighted the following:

- *The average BMI for the adult population has been in the overweight range since records began but is now heading towards the obese category.*
- *The proportion of adults in the heaviest BMI category has been increasing.*
- *By 2018 almost two-thirds of adults were within overweight or obese classifications.*
- *The average BMI of young adults (16-24) has increased the most, out of all age groups since 1995.*
- *Average BMI is patterned by level of deprivation with those from the most deprived areas consistently showing higher BMIs compared to the least deprived.*[12]

3.3 Within NHSGGC 67% of adults are overweight and obese. As overweight and obesity rises, so too does the burden of disease from type 2 diabetes (T2DM) and associated co-morbidities. Overweight and obesity is the single modifiable risk factor

for the development of T2DM, therefore weight management interventions are a priority. Increasing evidence of T2DM remission as a result of weight loss interventions offer the best opportunity to impact on population health outcomes[13].

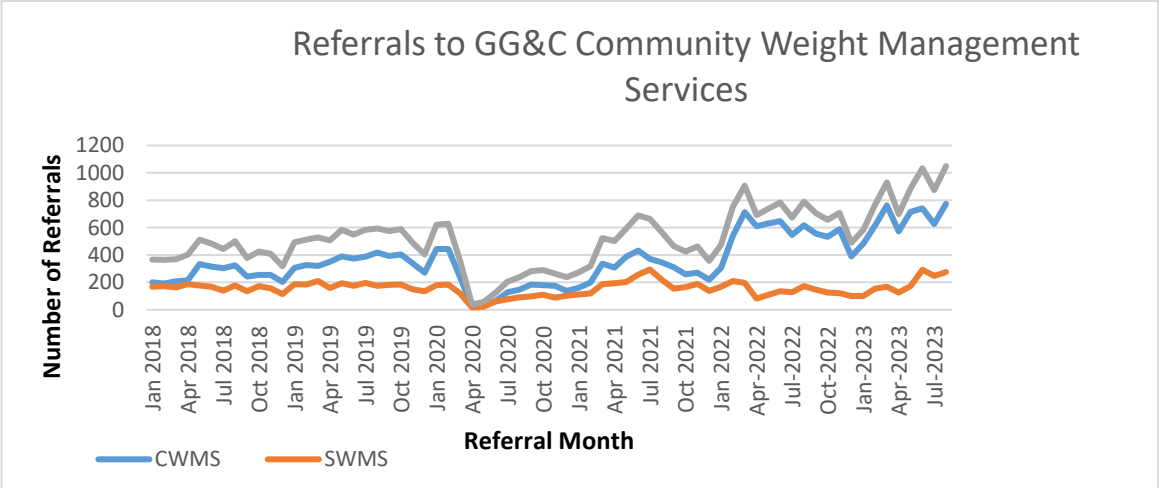
3.4 Targeted delivery of Community Weight Management services in local communities and online, are able to support service delivery at a size, scale and reach to meet both the geography and diversity of the population across GGC and have population impact.

3.5 In April 2023, a new multi-supplier framework commenced substantially increasing the number of in-person community based service coverage across the whole of the GGC area.

3.6 Service data from 2022-23 highlighted that referral rates were recovering from the pandemic to higher than pre-pandemic levels. With 7,170 total referrals, equating to approximately 1792 referrals each quarter.

3.7 During 2022-23, NHSGGC experienced significant data challenges with the contracted supplier and a retrospective data cleaning exercise is now underway and will be reported separately.

3.8 Data received during the first quarter of 2023-24 under the new supplier framework show a further, marked increase in referrals, with 2,230 referrals, representing a 25% increase on the same quarter in 22-23. The majority of referrals (80%) come from primary care, and work to improve both referral and engagement rates through clinical reinforcement with patients is ongoing and will be monitored through the NHSGGC assurance framework.



Graph 5: Monthly referral numbers by service

3.9 It is too early to tell from 2023 – 24 Quarter 1 data to what extent the new supplier contract will demonstrate improved outcomes for a larger number of patients, but early data is promising and shows that 70% of those opting in for tier 2 weight management go on to complete ten out of twelve weeks of the programme with almost a third achieving a 5% weight loss. These figures meet or exceed national benchmarks/ comparator studies for weight loss outcomes.[14,15]

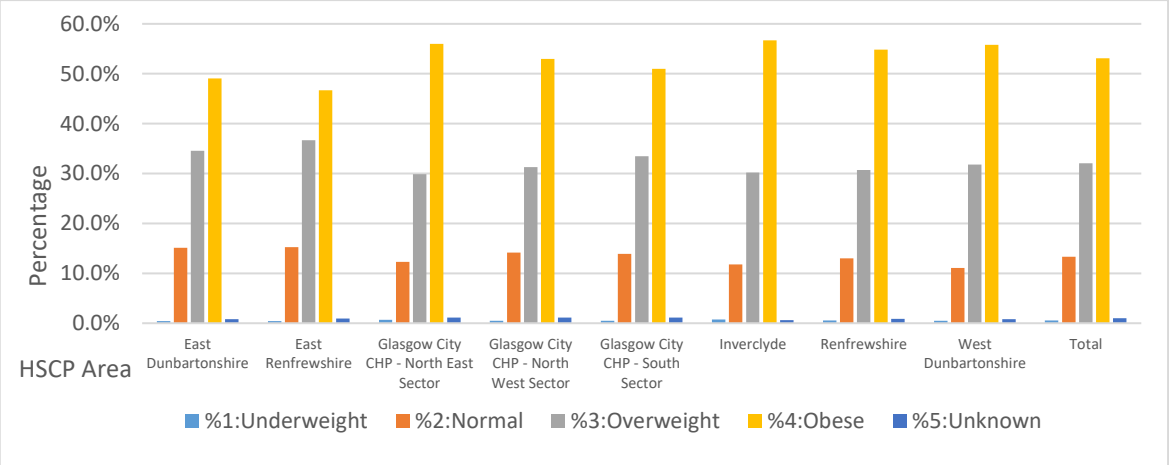
4. Type 2 Diabetes Mellitus (T2DM)

4.1 Diabetes is a growing problem. The incidence and prevalence of all types of diabetes has been steadily growing in the past 10 years. There are currently 66,677 patients diagnosed with T2DM across GGC. This is a rise of 4,687 cases from last year, representing 5.5% of the GGC population, with between 100-150 new diagnoses of T2DM every week.

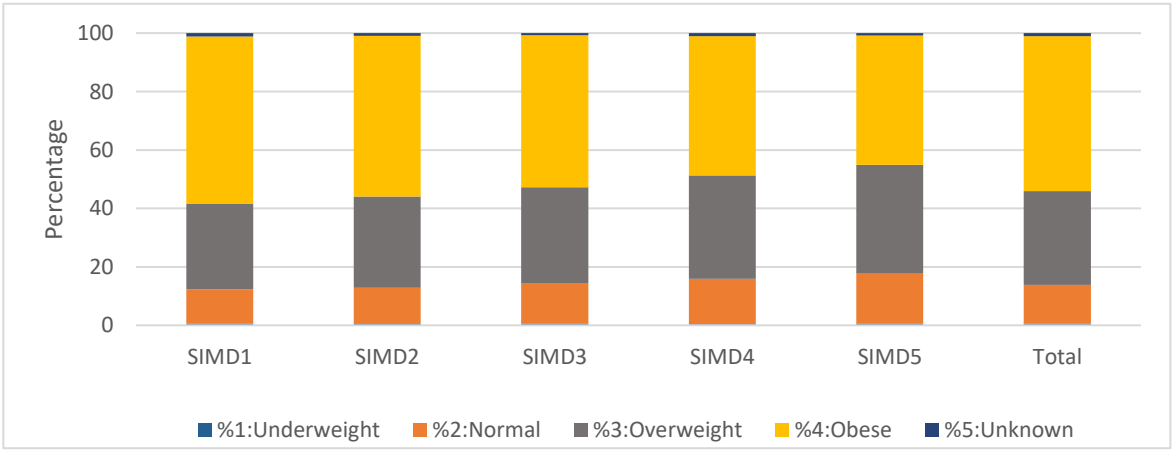
4.2 It is estimated that around 10% of cases of type 2 diabetes remain un-diagnosed[16]. Diabetes Scotland also estimates that over 500,000 people in Scotland are at high risk of developing type 2 diabetes[17] therefore significant unmet need within the GGC population would be anticipated.

4.3 Excess weight is the main modifiable risk factor for type 2 diabetes[18]. In Scotland 87.1% of those diagnosed with T2DM were classed as overweight or obese at the end of 2019.

4.4 Across NHSGGC, of those diagnosed with T2DM, 53% were classed as obese and 32% overweight, with the highest levels of obesity (>56%) seen in Inverclyde, and West Dunbartonshire (graph 6). The proportion of those classed as obese declines with increasing affluence (graph 7).



Graph 6: Proportion of adults diagnosed with T2DM by weight category and HSCP

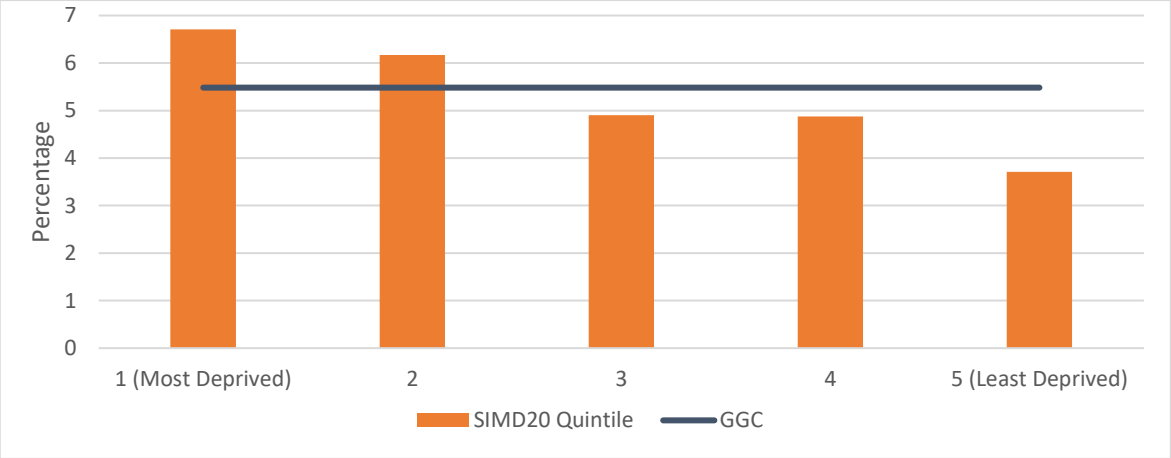


Graph 7: Proportion of adults diagnosed with T2DM by weight category and SIMD Quintile

4.5 A core element of T2DM care is the timely delivery of structured education to all those newly diagnosed. Control It Plus is the structured education programme which has been delivered across NHSGGC since the pandemic. An 'Opt Out' referral pathway for Control It Plus is operational and alongside that, eligible patients also receive an 'opt out' referral to GCWMS and other lifestyle interventions.

4.6 Evaluation of Control It Plus highlighted very high patient satisfaction for those who participated. The evaluation identified a range of significant impacts including weight loss and improvement in blood sugar levels or diabetes patients going into remission as a result of changes patients had made following the education sessions, weight management services and/or physical activity sessions.

4.7 Similar to overweight and obesity, prevalence of T2DM follows a socio-economic gradient with a strong correlation between deprivation and prevalence across NHSGGC. Graph 8 below shows that the majority of patients with a diagnosis of T2DM are resident in SIMD 1.



Graph 8: Proportion of adults diagnosed with T2DM by SIMD Quintile

4.8 Prevalence of T2DM is also strongly correlated with ethnicity, particularly with people of South Asian and Black origin where prevalence is approximately four to six times higher than in the white British population[19]. In addition onset of T2DM in these groups is often at younger age with a significant proportion diagnosed before the age of 40 years[20].

In order to increase awareness of T2DM within BME / South Asian communities, a programme to train and support a cohort of T2DM Community Champions (18) is being implemented. The training developed in conjunction with Diabetes Scotland comprised; T2DM awareness; lifestyle support service promotion and Control IT Plus education with a view to empower participants to promote messages and services in their communities, building on their existing community links and networks.

Feedback on the engagement and promotional activity undertaken is provided by Community Champions on a monthly basis, an online forum has been established to provide a platform for peer support amongst the Champions and in person touch points are scheduled quarterly.

5. Gestational Diabetes Mellitus (GDM)

5.1 Overweight and obesity is associated with a range of complications for pregnant women, both during their pregnancy and beyond. Having a BMI>25 increases the risk of Gestational Diabetes (GDM), thrombosis, pre-eclampsia, induction of labour and caesarean birth, while a raised BMI also increases the risk of having a miscarriage, early birth or stillbirth.

5.2 Analysis of a cohort of 18,119 women who were pregnant between January 2022 and May 2023 highlighted that 57.4% (n=10,938) were overweight or obese at the start of their pregnancy. In the same period, 1,045 women were diagnosed with GDM. This prevalence of GDM likely represents underdiagnosis and GGC is making good process to deliver the BMI threshold (BMI>30) for GDM testing in line with national SIGN guidance by 2024. Activity to enhance the care for women with GDM during and following their pregnancy is being rolled out across all maternity units with three Diabetes Specialist Midwives recruited to support its implementation.

5.3 In addition to risk of complications during pregnancy, overweight / obesity also increases the risk of women developing GDM in subsequent pregnancies or T2DM later in life. Evidence shows that up to 50% of women diagnosed with GDM go on to develop T2DM within five years of the birth of their child.

5.4 An opt out post-natal GCWMS referral pathway has been implemented for women with BMI>30 and a diagnosis of GDM. Around 16 weeks after the birth of their baby women are automatically contacted and offered support; women can choose to engage earlier or later than this point, depending on when they feel ready.

5.5 To strengthen our focus on prevention with this key target group a pathway to GCWMS for women who were overweight during their pregnancy is currently in development.

5.6 A summary of the Adult Healthy Weight and T2DM programmes delivered across NHSGGC is provided in Table 3.

Level	Intervention	Adult Healthy Weight	T2DM
1	Public health awareness and early detection • Public Health campaign • Targeted messaging with core messages • 'At risk' stratification • Case finding • Local level action	• www.nhsggc.scot/your-health/manage-your-weight - healthy weight information resources for patients • Glasgow City Food Plan • Local Food Policy Networks • Self-Management Resources (Weight Management)	• https://www.nhsggc.scot/t2diabeteshub - healthy weight / T2D prevention information resources for patients • Pre-diabetes education modules
2	Early intervention (for those at moderate or high risk) • Pre-diabetes education programme • Metabolic antenatal clinics • Maternal and infant nutrition pathways • Weight management programmes	• Community based physical activity opportunities • Walking Groups • Community Food Network • Community BME Access Programme • GP Exercise on referral	• Community BME Access Programme • Digital support for patients • Pre Diabetes intervention resources / CWMS pathways • Community Food Framework • Maternity pathway •
3	Targeted intervention (for those diagnosed with type 2 diabetes, at high risk, with pre-diabetes or gestational diabetes)	• Referral management /Motivational appointing • Tier 2 Community WMS (WW & Slimming World) • Post-natal referral pathway	• Opt out referral pathway /motivational appointing for newly diagnosed patients (WMS / Control It Plus)

	• Structured education for those with diabetes • Intensive weight management for remission • Weight management programmes Psychological support	• Specialist Weight Management services • Onward signposting / social prescribing	• Control It Plus (CIP) T2DM education programme • Maternity GDM Education / GWMS pathway • Onward signposting / social prescribing
4	Complex case management Advanced weight management input and specialist interventions	• Specialist Weight Management services -Bariatric pathway	• Specialist Weight Management services- • Bariatric pathway • Low Calorie Liquid Diet Pilot (Counterweight)

Table 3: Summary of Prevention and Early Intervention framework activity 2023-24

6. Going Forward

6.1 Key to our strategy to address Obesity within GGC population our 5 main priorities are:

i. Universal delivery of HENRY to families with pre-five children
ii. Delivery of tailored Weight Management Services for adolescents (Weigh to Go)
iii. Development of robust local Community Food Networks to build community capacity; cookery skills and food literacy and reduce food insecurity for vulnerable families including Thrive Under 5.
iv. Provision of weight management services at a size and scale to impact at population level an address clinical lead.
v. Provide early intervention education and weight management interventions to newly diagnosed patients with T2DM or Gestational Diabetes with a view to increasing remission rates.

7. Conclusion

7.1 Prevention of overweight and obesity within the population requires multi-level action; working at a societal level to address the obesogenic environment; adopting a life stage approach whereby interventions are tailored to different age groups, as well as providing a comprehensive approach to weight maintenance, weight management and supported lifestyle changes to address the chronic relapsing nature of the condition.

7.2 The prevalence of T2DM continues to steadily increase across Scotland and locally. Diabetes is closely related to deprivation and ethnic background and whilst 5.5% of the NHSGGC population are currently diagnosed, estimates suggest significant unmet need with prevalence is closer to 10%.

7.3 Obesity is the biggest driver of T2DM and a combination of structured education and weight management interventions are effective in improved management of the condition, delaying or avoiding complications and in an increasing number of cases supporting disease remission.

8. Recommendations

8.1 The NHSGGC Board are asked to:

- Advocate for the 5 priority areas of action on obesity:

  - Universal delivery of HENRY to families with pre-five children
  - Delivery of tailored Weight Management Services for adolescents (Weigh to Go)
  - Development of robust local Community Food Networks to build community capacity; cookery skills and food literacy and reduce food insecurity for vulnerable families including Thrive Under 5.
  - Provision of weight management services at a size and scale to impact at population level an address clinical lead.
  - Provide early intervention education and weight management interventions to newly diagnosed patients with T2DM or Gestational Diabetes with a view to increasing remission rates.
- Support and maintain investment in the 5 priority areas described.

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