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Quality of care of patients living with T2DM at a public sector district hospital

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South African Family Practice
ISSN: (Online) 2078-6204, (Print) 2078-6190

Quality of care of patients with type 2 diabetes mellitus at a public sector district hospital

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Dates:
Received: 25 Jan. 2023
Accepted: 06 Apr. 2023
Published: 06 June 2023

How to cite this article:
Fredericks KJ, Naidoo M. Quality of care of patients with type 2 diabetes mellitus at a public sector district hospital. S Afr Fam Pract. 2023;65(1), a5713. https://doi.org/10.4102/safp.v65i1.5713

Background: Globally, diabetes mellitus (DM) remains one of the leading causes of mortality, with approximately 2 million deaths in 2019, the condition also contributes significantly to adverse health conditions and costs. The study aimed to describe the quality of care (QOC) rendered to patients with type 2 DM (T2DM) seeking care at Wentworth Hospital (WWH), a district hospital in KwaZulu-Natal province, South Africa.

Methods: A descriptive cross-sectional design was used, and all patients living with T2DM on treatment who had accessed care for at least 1 year were included. Data were collected through structured exit interviews, and their clinical data were extracted from their medical records. Their knowledge, attitudes and practices were assessed using a 5-point Likert scale.

Results: The mean age (standard deviation [s.d.]) was 59 (13.0) years and most (65.3%) were female, of African (30.0%) and Indian (38.6%) descent, with two-thirds (69.4%) obtaining a secondary school education. Their mean glycated haemoglobin (HbA1c) (s.d.) was 8.6 (2.4%). Over 82% had one or more comorbidity, while 30% had at least one DM-related complication. Generally, participants were pleased with the care received, but their knowledge and practices related to their T2DM was suboptimal.

Conclusion: This study indicates that the QOC was suboptimal due to poor efficacy indicators, poor knowledge and lack of adequate lifestyle measures, despite the frequency of medical practitioner reviews.

Contributions: This study identified gaps in QOC and will aid South African public sector policy-makers in devising quality improvement initiatives.

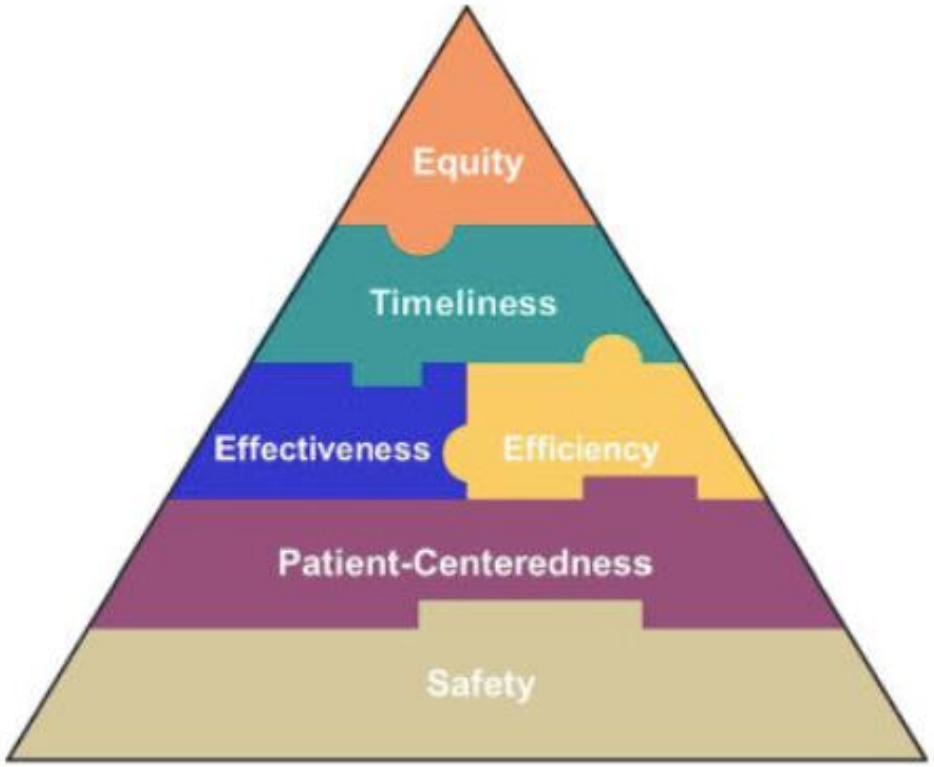
Keywords: type 2 diabetes mellitus; quality of care; public sector; district hospital; South Africa.

Introduction

- Globally, DM leading causes of mortality, (2 million deaths in 2019)
- IDF: 62% incr in prev in last 10 yrs
- Second leading cause of death in RSA after TB.
- Most pts access care at PHC and DHs
- Many challenges at this level of care
- DoH EML/STGs and SEMDSA

- In RSA healthcare quality – compromised
- Reduced quality- public loses confidence in the public system
- *The large unmet needs of people living with DM necessitate further exploration of patients' perceptions regarding their care at the primary care level.*

The Institute of Medicine defines quality in healthcare using **six** dimensions.



The Institute of Medicine Model for Quality in Healthcare.

Methods

- **Aim:** Describe QOC of PLT2DM seeking care at WWH.
- **Other objectives:** Review demographic and clinical data and do a KAP survey. QOC measured against SEMDSA/ DoH guidelines.
- **Design:** Descriptive cross-sectional (4 months)
- **Participants:** On Rx from WWH for at least one year
- **Sample size:** 361---(power of 95% and a margin of error of 5%).
- Systematic randomised sampling method used

Data Collection:

- Face-to-face interviews with a structured questionnaire
- A validated data extraction tool - medical records

Analysis:

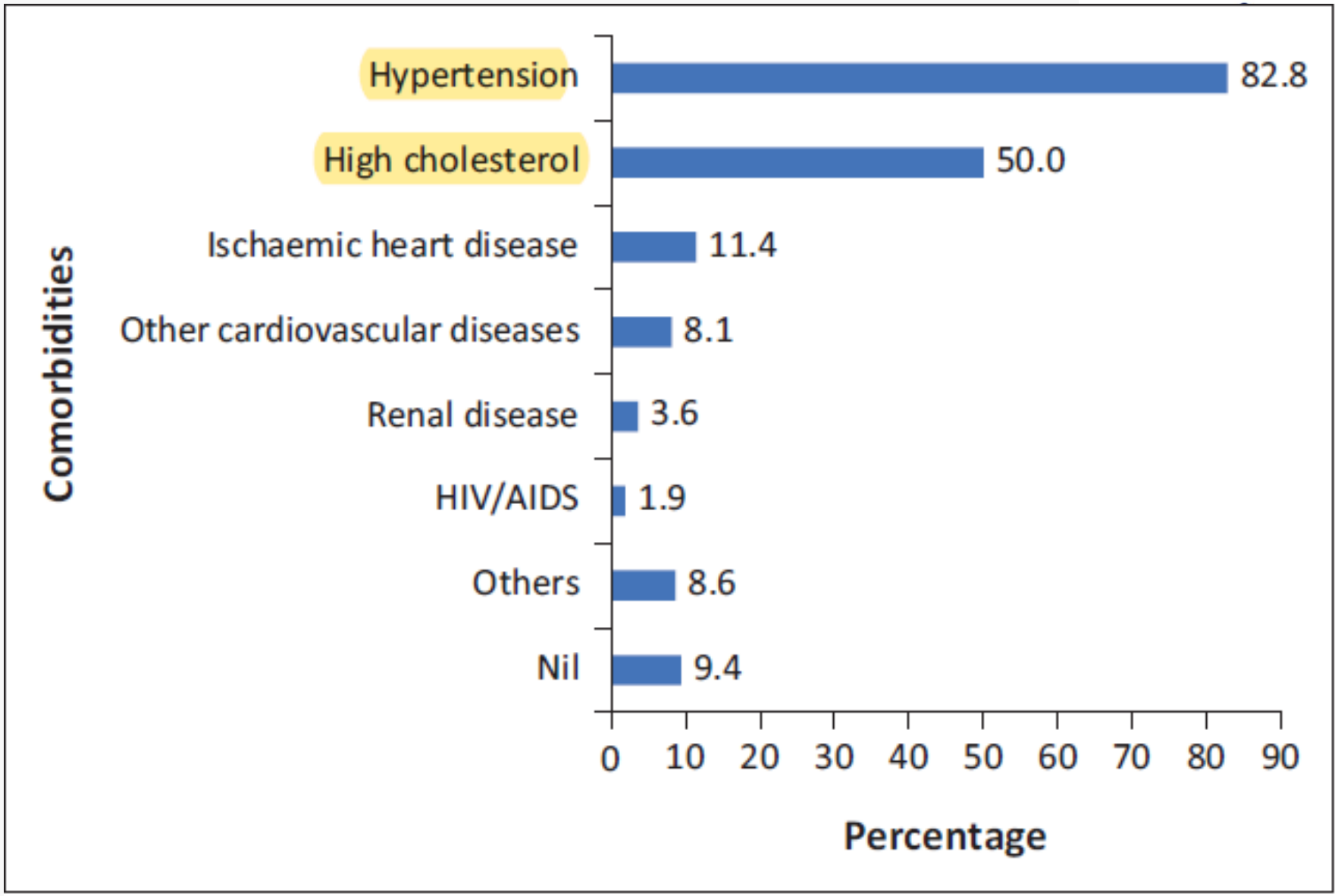
- Captured in Excel and imported into SPSS
- Presented as means (SD) or medians (IQR) as appropriate
- Analytical tests to measure associations
- Variables: Demographic information, clinical information, KAP exit survey

Results

TABLE 1: Demographic and lifestyle profile of participants ($N = 360$).

Variables	Categories	*n*	%	Mean ± s.d.	Min	Max
Age (years)	≤ 30	12	3.3	-	-	-
	31–40	14	3.9	-	-	-
	41–50	52	14.4	-	-	-
	51–60	113	31.4	-	-	-
	61–70	98	27.2	-	-	-
	Above 70	71	19.7	-	-	-
	Years	-	-	59.3 ± 13.0	18	89
Gender	Male	125	34.7	-	-	-
	Female	235	65.3	-	-	-
Race	African people	108	30.0	-	-	-
	Indian people	139	38.6	-	-	-
	Mixed race people	84	23.3	-	-	-
	White people	25	6.9	-	-	-
	Others	4	1.1	-	-	-
Education	Nil	3	0.8	-	-	-
	Primary	75	20.8	-	-	-
	Secondary	250	69.4	-	-	-
	Tertiary	25	6.9	-	-	-
	Unspecified	7	1.9	-	-	-
Current smoker	Yes	72	20.0	-	-	-
	No	288	80.0	-	-	-
	Pack-years		-	14.81 ± 11.2	1	48
Ex-smoker	Yes	48	13.3	-	-	-
	No	312	86.7	-	-	-
	Pack-years	-	-	20.98 ± 18.5	0.5	70
Alcohol consumption	Yes	77	21.3	-	-	-
	No	284	78.7	-	-	-
	Units consumed/ week	-	-	4.0 ± 4.2	1	30
Participation in recreational drug use	Yes	7	1.9	-	-	-
	No	353	98.1	-	-	-

s.d., standard deviation; Min, minimum; Max, maximum.



HIVM/AIDS, human immunodeficiency virus and acquired immunodeficiency syndrome.

FIGURE 1: Comorbidities among participants with diabetes mellitus.

Variables	Categories	*n*	%	Mean ± s.d.	Min	Max	Median	IQR
DM education source	Doctor	275	76.4	-	-	-	-	-
	Nurse	41	11.4	-	-	-	-	-
	Dietician	34	9.4	-	-	-	-	-
	Others	10	2.8	-	-	-	-	-
	0–5	100	27.8	-	-	-	-	-
	6–10	117	32.5	-	-	-	-	-
	11–15	61	16.9	-	-	-	-	-
Years since first diagnosis	16–20	21	5.8	-	-	-	-	-
	21–25	36	10.0	-	-	-	-	-
	Above 25	25	7.0	-	-	-	-	-
	Years	-	-	10.9 ± 8.1	1	43	-	-
Number of years treated at the hospital for DM	0–5	224	62.2	-	-	-	-	-
	6–10	83	23.1	-	-	-	-	-
	11–15	29	8.1	-	-	-	-	-
	Above 15	24	6.7	-	-	-	-	-
	Years	-	-	-	1	37	5	2–9
Exercise frequency	Not at all	187	51.9	-	-	-	-	-
	Twice a week	102	28.3	-	-	-	-	-
	3–4 times per week	43	11.9	-	-	-	-	-
	≥ 5 times per week	28	7.8	-	-	-	-	-
	Diet only	5	1.4	-	-	-	-	-
	Tablets only	173	48.1	-	-	-	-	-
Current medical management of DM	Injectables only	107	29.1	-	-	-	-	-
	Tablets and injectables	75	20.8	-	-	-	-	-
History of episodes of low blood sugar (< 4 mmol)	Yes	131	36.4	-	-	-	-	-
	No	229	63.6	-	-	-	-	-
History of episodes of high blood sugar (> 10 mmol)	Yes	223	61.9	-	-	-	-	-
	No	137	38.1	-	-	-	-	-
I know my current/latest HbA1c value	≤ 6.5	5	1.4	-	-	-	-	-
	6.5–7.5	10	2.8	-	-	-	-	-
	7.5–9.5	13	3.6	-	-	-	-	-
	> 9.5	13	3.6	-	-	-	-	-
	Don't know	319	88.6	-	-	-	-	-
History of cholesterol checks in the past year	No	97	30.0	-	-	-	-	-
	Yes, and low	29	8.1	-	-	-	-	-
	Yes, and high	104	28.9	-	-	-	-	-
	Yes, and normal	130	36.1	-	-	-	-	-
History of the previous ECG done	Yearly	32	8.9	-	-	-	-	-
	Maybe once	184	51.1	-	-	-	-	-
	Never	144	40.0	-	-	-	-	-
History of previous urine test	At every visit	21	5.8	-	-	-	-	-
	Yes, sometimes	156	43.3	-	-	-	-	-
	Yes, but only when sugar is high	120	33.3	-	-	-	-	-
	Never	63	17.5	-	-	-	-	-
I have a DM diary	Yes	36	10.0	-	-	-	-	-
	No	324	90.0	-	-	-	-	-
Has your healthcare worker spoken to you about your diet?	Yes	339	94.2	-	-	-	-	-
	No	21	5.8	-	-	-	-	-

TABLE 3: Association between the patient perception of quality of care and diabetes mellitus educator/care provider.

Perception	Major DM educator and care provider										Chi-square test	
	Doctor		Nurse		Dietician		Others		Total		χ^2	p
	n	%	*n*	%	*n*	%	*n*	%	*n*	%		
The doctor/HCW adequately counselled me on my condition	-	-	-	-	-	-	-	-	-	-	92.022	≤ 0.001*
Strongly disagree	1	20.0	1	20.0	1	20.0	2	40.0	5	1.4	-	-
Disagree	22	75.9	1	3.4	4	13.8	2	6.9	29	8	-	-
Neutral	21	55.3	5	13.2	6	15.8	6	15.8	38	10.5	-	-
Agree	216	82.4	32	12.2	14	5.3	-	-	262	72.6	-	-
Strongly agree	15	57.7	2	7.7	9	34.6	-	-	26	7.2	-	-
The doctor/HCW involved me in my management goals and treatment options	-	-	-	-	-	-	-	-	-	-	41.882	≤ 0.001*
Strongly disagree	8	72.7	-	-	2	18.2	1	9.1	11	30.6	-	-
Disagree	62	67.4	9	9.8	15	16.3	6	6.5	92	25.5	-	-
Neutral	18	81.8	3	13.6	-	-	1	4.5	22	6.1	-	-
Agree	181	80.8	29	12.9	12	5.4	2	0.9	224	62.0	-	-
Strongly agree	6	54.5	-	-	5	45.5	-	-	11	3.0	-	-
The doctor/HCW addressed my concerns	-	-	-	-	-	-	-	-	-	-	29.610	≤ 0.003*
Strongly disagree	6	71.4	-	-	1	14.3	1	14.3	7	1.9	-	-
Disagree	31	72.1	5	11.6	5	11.6	2	4.7	43	11.9	-	-
Neutral	27	65.9	4	9.8	6	14.6	4	9.8	41	11.4	-	-
Agree	196	80.7	29	11.9	15	6.2	3	1.2	243	67.3	-	-
Strongly agree	16	61.5	3	11.5	7	26.9	-	-	26	7.2	-	-
After contact with the doctor/ HCW, I feel that I understand my condition very well	-	-	-	-	-	-	-	-	-	-	33.354	≤ 0.001*
Strongly disagree	2	50.0	-	-	2	50.0	-	-	4	1.1	-	-
Disagree	20	83.3	-	-	1	4.2	3	12.5	24	6.6	-	-
Neutral	37	75.5	6	12.2	4	8.2	2	4.1	49	13.6	-	-
Agree	194	76.4	35	13.8	20	7.9	5	2.0	254	70.4	-	-
Strongly agree	22	75.9	-	-	7	24.1	-	-	29	8.0	-	-
I receive good quality care at WWH	-	-	-	-	-	-	-	-	-	-	24.665	≤ 0.016*
Strongly disagree	6	66.7	-	-	2	22.2	1	11.1	9	2.5	-	-
Disagree	15	71.4	1	4.8	3	14.3	2	9.5	21	5.8	-	-
Neutral	28	73.7	3	7.9	3	7.9	4	10.5	38	10.5	-	-
Agree	198	78.3	32	12.6	20	7.9	3	1.2	253	70.1	-	-
Strongly agree	28	71.8	5	12.8	6	15.4	-	-	39	10.8	-	-

e connected

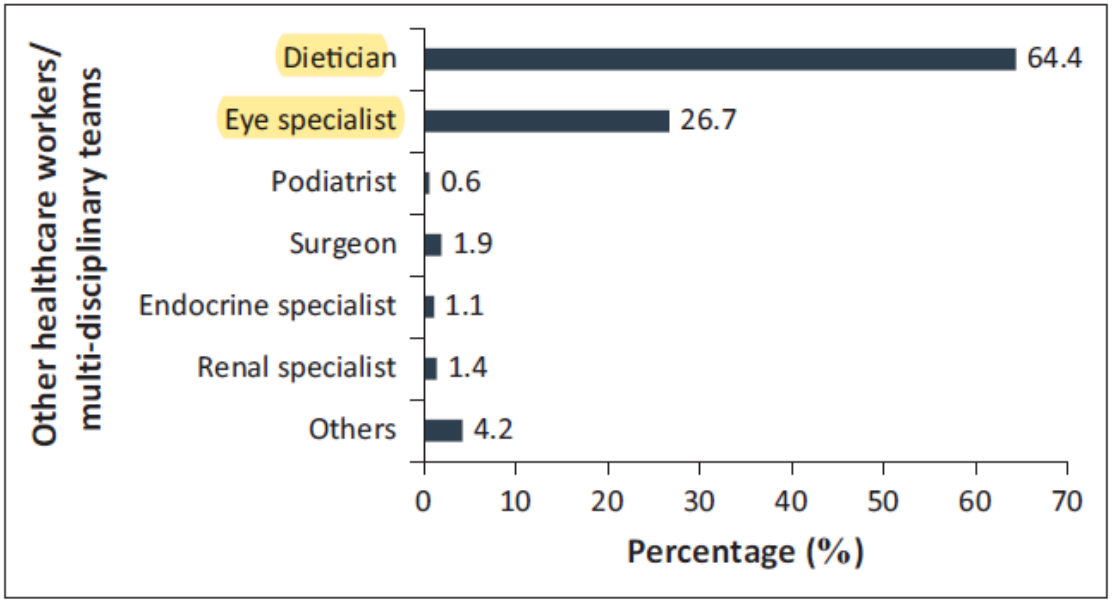


FIGURE 2: Referral to other healthcare workers in the previous 12 months.

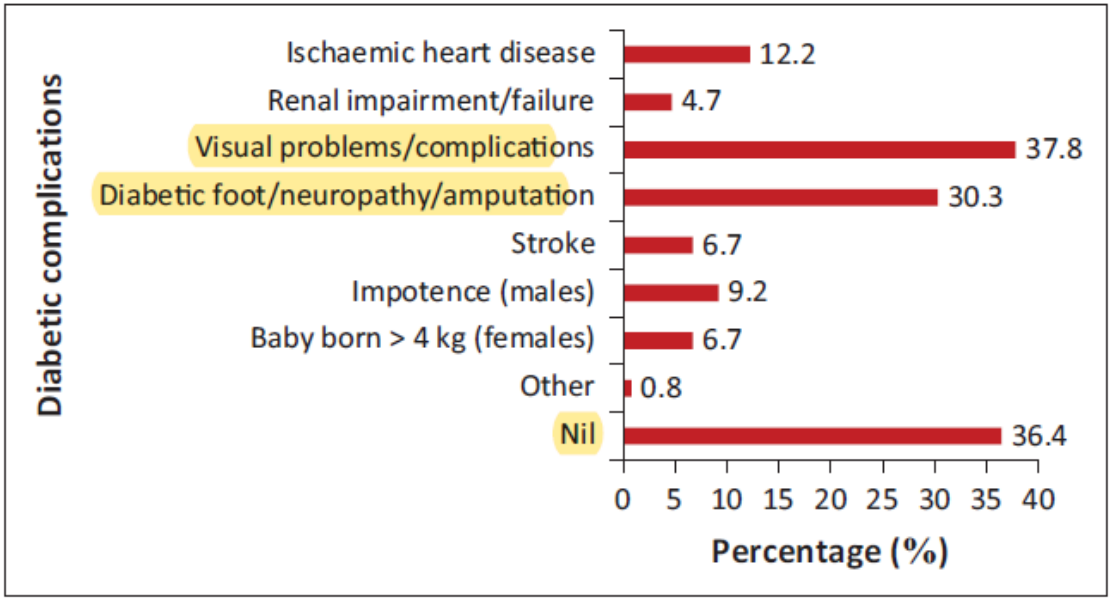


FIGURE 3: Complications among the participants.

TABLE 4: Outcome and process indicators.

Variable	Documented measurement				*p*	Mean	s.d.	Min.	Max.	Last documented							
	Yes		No							Not at all		Three monthly		Six monthly		Annually	
	n	%	*n*	%						*n*	%	*n*	%	*n*	%	*n*	%
Weight (kg)	342	95.0	18	5.0	< 0.001*	81.3	17.5	44.0	140.0	21	5.8	61	16.9	247	68.6	31	8.6
BMI (kg/m²)	19	4.7	343	95.3	< 0.001*	31.5	10.4	19.0	54.0	343	95.3	3	0.8	14	3.9	-	-
Waist circumference (cm)	11	3.1	349	96.9	< 0.001*	99.6	18.0	73.0	130.0	349	96.9	5	1.4	6	1.7	-	-
Blood pressure (mmHg)	358	99.4	2	0.6	< 0.001*	139.5/77.7	16.1/9.9	100.0/51.0	193.0/111.0	8	2.2	69	19.2	253	70.3	30	8.3
Random blood sugar (mmol/L)	357	99.2	3	0.8	< 0.001*	7.8	2.6	1.00	18.8	8	2.3	69	19.2	253	70.3	30	8.3
HbA1c	321	89.2	39	10.8	< 0.001*	8.6	2.4	5.60	19.1	42	11.7	55	15.3	238	66.1	25	6.9
Foot examinations	9	2.5	351	97.5	< 0.001*	Abnormal	-	-	-	351	97.5	4	1.1	3	0.8	2	0.6
Urine dipstick	36	10.0	324	90.0	< 0.001*	1+ Pr (50%)	-	No Pr	3+	324	90.0	9	2.5	23	6.4	4	1.1

Discussion

- Promising and alarming findings.
- Overall, QOC was poor
- Most –women and good education.
- Most participants OHA .
- Exercise frequency poor
- Pts perception of care: good knowledge, good QOC, good relationship with HCP
- Outcome indicators poor: Poor knowledge of their targets, Most uncontrolled, 28% controlled

- Adequate frequency of visits in last year but poor preventative patient strategies.
- HCW, Health system and patient factors
- Need for addressing these issues
- Substantial quality gaps
- Patient-centered communication
- Chronic care model
- Patients are not meeting treatment goals

Recommendations

- Performance feedback
- Physician reminders
- Structured care management plans
- Monitoring plan

Conclusion

- **QOC was suboptimal**: Poor efficacy indicators, poor knowledge and lack of adequate lifestyle measures
- **Resource constraints** in South Africa's public sector
- **Management** should be safe, effective, patient-centred, timely, efficient and equitable.
- **Quality improvement system**

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Acknowledgements

- I would like to express my special thanks of gratitude to Gill Hendry for her assistance with data preparation and analysis.

- I would like to thank the wonderful staff at Wentworth Hospital for facilitating my data collection

Thank you ☺

Do you have any questions?

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