

## **Project Title**

Retrospective Review of Foot Surveillance Service for Patients with Moderate to High-Risk Diabetic Foot in Primary Care: A Preliminary Analysis

## **Project Lead and Members**

**Project Lead:** Tan E

**Project Members:** Tan DML, Yeo LS, Foo JSR, Chang X, Pang SB, Goh PS, Lim HT, Xie Y, Low KQ, Lee ES , Griva K, Zhu JX

## **Organisation(s) Involved**

Medical, National Healthcare Group Polyclinics, National Healthcare Group HQ, Nanyang Technological University

## **Healthcare Family Group(s) Involved in this Project**

Medicine, Healthcare Administration

## **Applicable Specialty or Discipline**

General Medicine, Group Integrated Care, Information Management and Analytics

## **Project Period**

Start date: May 2017

Completed date: March 2022

## **Aims**

To find out the prevalence of patient complexity in primary care in Singapore, and the factors associated with complexity.

## **Project Attachment**

See poster appended/ below

## **Background**

See poster appended/ below

## **Methods**

See poster appended/ below

## **Results**

See poster appended/ below

## **Conclusion**

See poster appended/ below

## **Additional Information**

Singapore Health & Biomedical Congress (SHBC) 2023: Singapore Primary Care Award  
(Poster) – (Gold Award)

## **Project Category**

Applied/ Translational Research

Quantitative Research

## **Keywords**

Diabetic Foot, Surveillance, Prevalence

## **Name and Email of Project Contact Person(s)**

Name: Elaine Tan

Email: [ELAINE\\_TAN\\_YL@NHGP.COM.SG](mailto:ELAINE_TAN_YL@NHGP.COM.SG)

# Retrospective Review of Foot Surveillance Service for Patients with Moderate- to High-Risk Diabetic Foot in Primary Care: A preliminary analysis



National Healthcare Group  
POLYCLINICS

Tan E<sup>1</sup>, Tan DML<sup>1</sup>, Yeo LS<sup>2</sup>, Foo JSR<sup>1</sup>, Chang X<sup>2</sup>, Pang SB<sup>2</sup>, Goh PS<sup>2</sup>, Lim HT<sup>3</sup>, Xie Y<sup>3</sup>, Low KQ<sup>4</sup>, Lee ES<sup>1,5</sup>, Griva K<sup>5</sup>, Zhu JX<sup>2</sup>

<sup>1</sup>Medical, National Healthcare Group Polyclinics, Singapore;

<sup>2</sup>Nursing, National Healthcare Group Polyclinics, Singapore;

<sup>3</sup>Information Management and Analytics, National Healthcare Group Polyclinics, Singapore;

<sup>4</sup>Group Integrated Care, National Healthcare Group HQ, Singapore

<sup>5</sup>Lee Kong Chian School of Medicine, Nanyang Technological University, Singapore

## INTRODUCTION

Recognizing the increase in the prevalence of diabetes mellitus (DM) in Singapore<sup>1</sup> and the relatively high diabetes related amputation rates in Singapore compared with other countries<sup>2</sup>, Foot Surveillance (FS) service was launched at NHGP in 2017. FS offers targeted education and timely intervention for DM patients with any abnormalities identified at diabetic foot screening (DFS), including patients found to have conditions putting them at moderate or high risk of developing diabetic foot complications.

## OBJECTIVE

The purpose of this study is to elucidate baseline characteristics of DM patients reviewed at FS between May 2017 to Mar 2022. Patients at risk of developing diabetic foot complications who returned for diabetic foot reviews were further evaluated to explore factors associated with deteriorating foot status.

## METHOD

This is a retrospective study of diabetic patients reviewed at FS from May 2017 to Mar 2022. Demographics and clinical data were retrieved from FS registry and electronic medical records with data analysed using descriptive and binary logistic regression analysis.

## RESULTS

Fig 1. Pie charts show age and ethnicity of patients who were seen in FS at least once (n=2274)

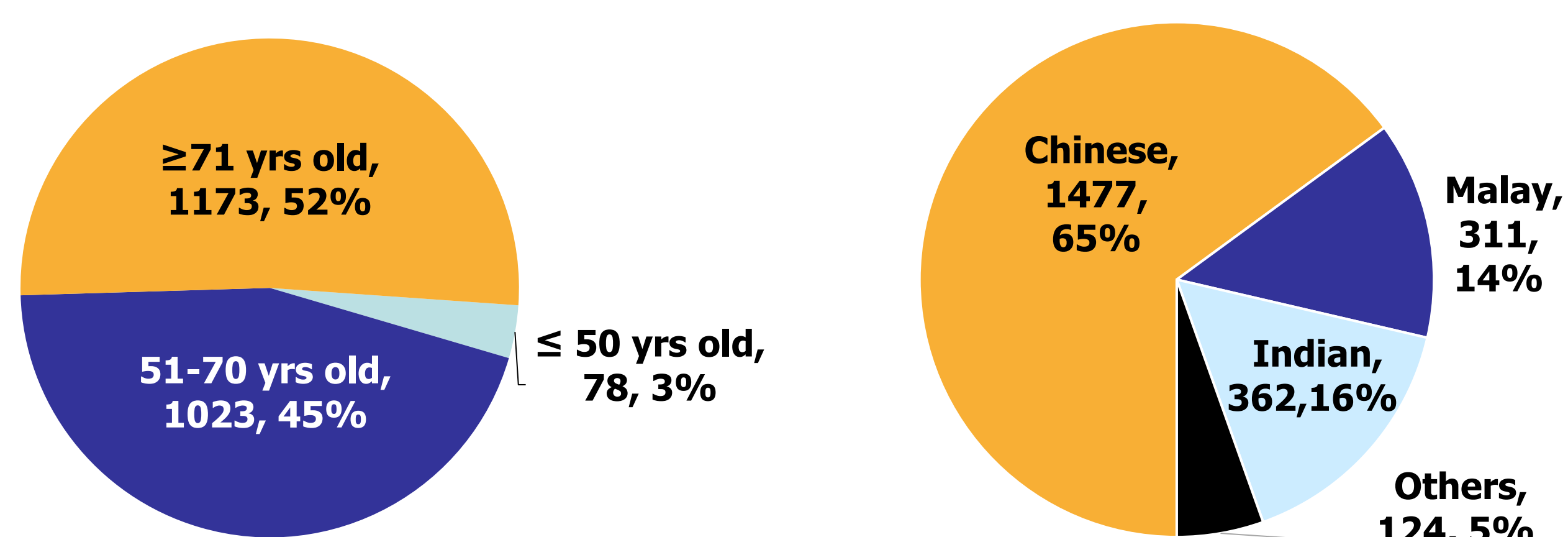


Table 1: Patients (n=2274) were seen in FS at least once

Variables	Mean (± SD); n (%)
Age	71 (±10)
Gender	Male 1225 (53.9) Female 1049 (46.1)
Mean duration of diabetes (years)	11 (±8)
Mean HbA1c	7.4 (±1.4)
Comorbidities	Congestive cardiac failure 186 (8.2) Hypertension 2029 (89.2) Dyslipidaemia 2220 (97.6) eGFR 225 (10) Stroke 432 (19)

## REFERENCES

1. Ministry of Health. National Health Survey 2010. Singapore: Epidemiology & Disease Control Division, Ministry of Health, Singapore; 2010.
2. Riandini T, Pang D, Toh MPHS, Tan CS, Choong AMTL, Lo ZJ, Chandrasekar S, Tai ES, Tan KB, Venkataraman K. National Rates of Lower Extremity Amputation in People With and Without Diabetes in a Multi-Ethnic Asian Population: a Ten Year Study in Singapore. Eur J Vasc Endovasc Surg. 2022 Jan;63(1):147-155. doi: 10.1016/j.ejvs.2021.09.041. Epub 2021 Dec 14. PMID: 34916107.

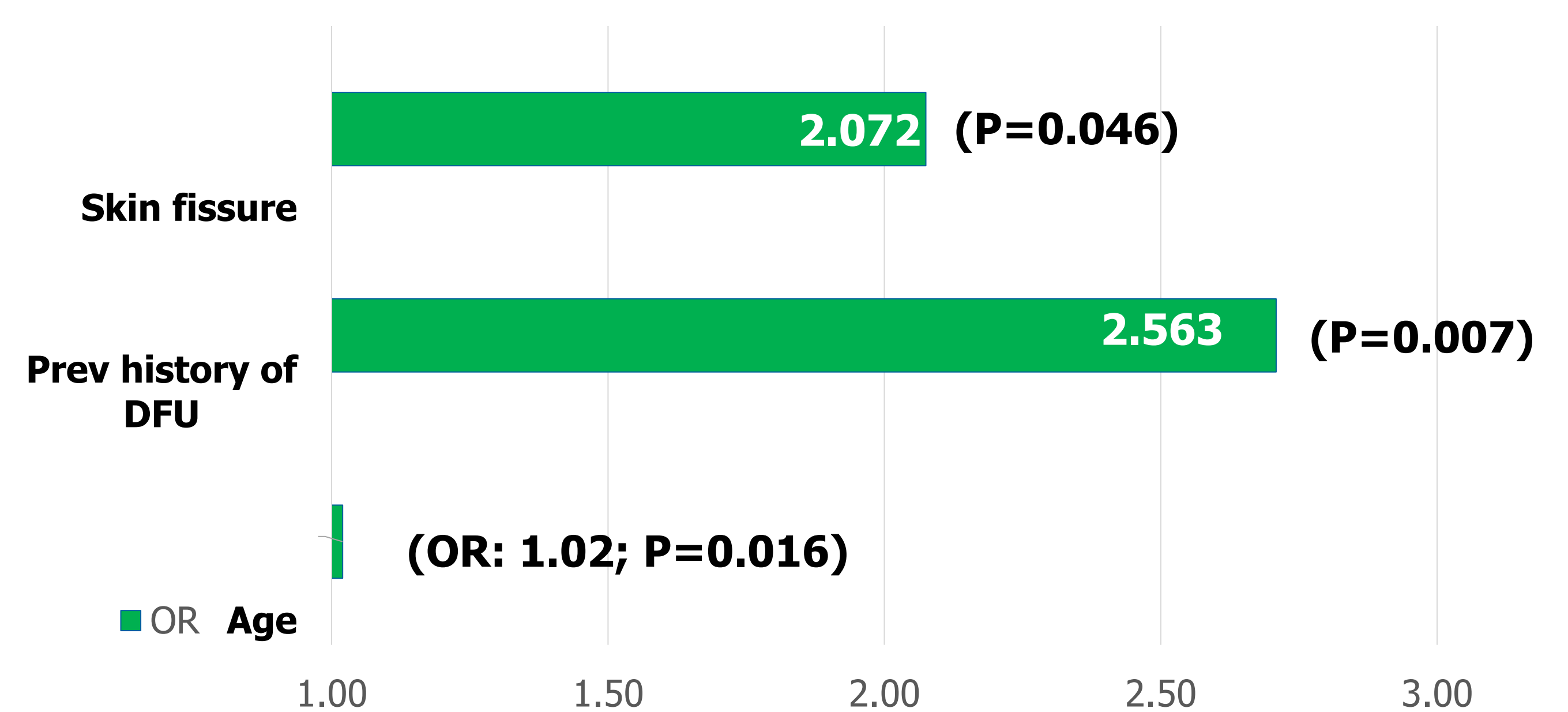
## RESULTS

Table 2: Patients (n=1698) returned for subsequent diabetic foot review within the next 2 years.

Variables	n (%)
Previous history of DFU	216 (12.7)
Previous history of amputation	118 (7)
Foot examination findings	Callus 512 (30.2)
	Skin fissure 138 (8.1)
	Loss of Protective Sensation 430 (25.6)
	Bunion only 384 (22.8)
	Claw/Hammer toe only 228 (13.5)
	Charcot only 11 (0.9)
	At least 1 Foot Pulse present 1559 (94.5)
Foot Risk Deterioration	Yes (Deteriorated) 321 (18.9)
	No 1377 (81.1)

Of the 1698 who returned for further foot checks at DFS or FS, the foot examination findings were evaluated. Up to 30% of patients presented with at least one callus, 27% with loss of protective sensation, 21% with bunion deformity, 13% with claw/hammer toe(s), and 0.9% with Charcot foot. Approximately 13% of patients have had at least one episode of diabetic foot ulcer (DFU) and 8% at least one episode of foot/toe amputation.

Fig 2. Odds of Foot Risk Deterioration



Binary logistic regression analysis (n=866) showed that with increase in age by one year, the risk of foot condition deterioration increases 1.02 times (OR 1.02; 95%CI 1.002–1.037). Patients with history of DFU and with skin fissures were respectively 2.563 times (OR 2.563; 95%CI 1.241–5.292) and 2.072 times (OR 2.072; 95%CI 1.011–4.248) more likely to have foot condition deterioration compared to those without prior DFU and skin fissure (Fig 2).

## DISCUSSION AND CONCLUSIONS

The factors identified to be associated with foot condition deterioration such as age, history of DFU and skin fissure should be emphasized during foot education to mitigate diabetic foot complications.

## ACKNOWLEDGEMENTS

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