

**Self-care behaviours in Ghanaian adults with type 2 diabetes:
adherence and barriers**

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DECLARATIONS

Statement of originality

I hereby certify that the work embodied in the thesis is my own work, conducted under normal supervision. The thesis contains no material which has been accepted, or is being examined, for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made. I give consent to the final version of my thesis being made available worldwide when deposited in the University's Digital Repository, subject to the provisions of the Copyright Act 1968 and any approved embargo.

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Thesis by Publication

I hereby certify that this thesis is in the form of a series of papers. I have included as part of the thesis a written declaration from each co-author, endorsed in writing by the Faculty Assistant Dean (Research Training), attesting to my contribution to any jointly authored papers.

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CONTRIBUTION STATEMENT

By signing below, I confirm that **Mr. Victor Mogre** contributed and led manuscript conceptualisation, study design, data collection, data analysis and interpretation, and drafting and final preparation of the following manuscripts:

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LIST OF ABBREVIATIONS

ADA: American Diabetes Association

ASCBQ: Adherence to Self-Care Behaviours Questionnaire

BMI: Body Mass Index

CFA: Confirmatory Factor Analysis

CFI: Comparative Fit Index

CI: Confidence Interval

COREQ: Consolidated Criteria for Reporting Qualitative Research

CPD: Continuous Professional Development

DAWN: Diabetes Attitudes, Wishes, and Needs

DHPSC: Diabetes Health Promotion Self-Care Scale

DSCS: Diabetes Self-Care Scale

D-SMART: Diabetes Self-Management Assessment Tool

DSMI: Diabetes Self-Management Instrument

DSMS: Diabetes Self-Management Scale

GFI: Goodness-of-Fit Index

GHS: Ghana Health Service

GNI: Gross National Income

GPs: General Practitioners

HbA1c: Glycated Haemoglobin

HBM: Health Belief Model

HCPs: Health Care Providers

HICs: High Income Countries

IBM: International Business Machines Corporation

IDF: International Diabetes Federation

IOM: Institute of Medicine

IPAQ: International Physical Activity Questionnaire

IQR: Interquartile Range

LMICs: Lower- and Middle- Income Countries

MESH: Medical Subject Headings

MHPE: Masters in Health Professions Education

MOH: Ministry of Health

MMAS: Morisky Medication Adherence Scale

NCDs: Non-communicable Diseases

NFI: Normed Fit Index

NHLBI: National Heart, Lung and Blood Institute

PBC: Perceived Behavioural Control

PCDS: Perceived Competence for Diabetes Scale

PhD: Doctor of Philosophy

PMT: Protection Motivation Theory

PNFI: Parsimonious Normed Fit Index

PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses

PROSPERO: International Prospective Register of Systematic Reviews

PWD: Person with Diabetes

QR: Quantile Regression

RMR: Root Mean Square Residual

RMSEA: Root Mean Square Error of Approximation

SCAQ: Self-Care Activity Questionnaire

SCI: Self-Care Inventory

SCT: Social Cognitive Theory

SD: Standard Deviation

SDH: Social Determinants of Health

SDSCA: Summary of Diabetes Self-Care Activities

SMBG: Self-Monitoring of Blood Glucose

SPSS: Statistical Package for the Social Sciences

SRM: Self-Regulated Model of Illness

SSA: Sub-Saharan Africa

TDAQ: Diabetes Activities Questionnaire

TLI: Tucker Lewis Index

TPB: Theory of Planned Behaviour

TRA: Theory of Reasoned Action

TTM: Trans-Theoretical Model

UK: United Kingdom

UNICEF: United Nations Children's Fund

USA: United States of America

WC: Waist Circumference

WHO: World Health Organization

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THESIS ABSTRACT

There is a dearth of data regarding adherence to self-care behaviours, and associated barriers among people with type 2 diabetes in Sub-Saharan Africa including Ghana, as described in **Chapter 1**. The remaining Chapters of the thesis sought to address this major gap in the literature.

Chapter 2 contains a systematic review of the literature on adherence to diabetes self-care from low-and middle-income countries (LMICs), describing self-reported adherence rates for the following self-care behaviours: diet, exercise, self-monitoring of blood glucose (SMBG), medication taking and foot care. Twenty-seven quantitative studies from 18 LMICs were included in the systematic review. Adherence was described in two ways: number of days people with diabetes adhered to a self-care behaviour in the past week and the proportion of diabetes patients adhering to a recommended self-care behaviour. Adherence ranged from 2.3 to 4.6 days per week for diet, 5.5 to 6.8 days per week for medication taking, 1.8 to 5.7 days per week for exercise, 0.2 to 2.2 days per week for SMBG and 2.2 to 4.3 days per week for foot care. Proportions of participants adhering to a recommended self-care behaviour varied from 29.9 to 91.7% for diet, 26.0 to 97.0% for medication taking, 26.7 to 69.0% for exercise, 13.0 to 79.9% for SMBG and 17.0 to 77.4% for foot care. It was concluded that adherence to self-care behaviours was generally low and varied widely across studies.

In **Chapter 3**, an evaluation of the psychometric properties of the Summary of Diabetes Self-Care Activities measure (SDSCA) was undertaken, as a potentially feasible tool for population-level use in Ghana. The SDSCA was administered to 187 adults living with type 2 diabetes from three diabetes clinics in Ghana. The analyses showed that people with type 2 diabetes found the items of the SDSCA to be understandable, readable, easy to use, clear, unambiguous and relevant to diabetes self-care. However, a revision of the diet-related item 4 may improve

further the understanding of this item in a Ghanaian context. The results of a confirmatory factor analysis indicated that the four-factor structure of the SDSCA was maintained.

The study presented in **Chapter 4** describes self-reported adherence to the following self-care behaviours: diet, exercise, SMBG and foot care among people with type 2 diabetes people. In addition, factors associated with adherence to diabetes self-care among people with type 2 diabetes were investigated. Consenting type 2 diabetes patients (n=187) attending diabetes outpatient clinic appointments at three hospitals in the Tamale Metropolis of Ghana completed a cross-sectional survey comprising the SDSCA, demographic characteristics and diabetes history. Participants reported exercising 4.8 days on average and followed diet, foot care and SMBG for an average of 4.4, 2.9 and 2.2 days per week, respectively. Increased level of education was associated with higher adherence to exercise, diet and foot care. In addition, women were less likely to perform SMBG compared to men. It was concluded that relatively low adherence was evident in relation to diet, SMBG and foot care; and that interventions should include special attention to women and to people with a low level of education.

Having identified that many people with type 2 diabetes report low adherence to diabetes self-care, **Chapter 5** explored barriers to diabetes self-care as perceived by people with type 2 diabetes and their healthcare providers (HCPs). Semi-structured interviews were conducted with 23 people living with type 2 diabetes and 14 HCPs recruited from the diabetes clinics of three hospitals in Tamale, Ghana. Potential barriers were conceptualised in accordance with the constructs of the Theory of Planned Behaviour (TPB). The analysis showed a number of barriers relating to attitudes including the misconception that diabetes was caused by spiritual forces or curses, intentional non-adherence and lack of motivation to exercise. Barriers relating to subjective norms included inadequate family support, social stigma and cultural beliefs. Perceived behavioural control barriers included low income levels, lack of glucometers, and inadequate access to foods due to erratic supply or seasonality.

Described in **Chapter 6** are the attitudes, facilitators and barriers to the provision of self-care support as perceived by the 14 HCPs interviewed for chapter 5. Although HCPs perceived self-care was the responsibility of the individual with diabetes, they also felt a sense of urgency and responsibility to provide diabetes education. They perceived their role to be one of information sharing rather than building motivation or confidence in relation to self-care behaviours. Barriers that hindered self-care support included language barriers and poor inter-professional collaboration. Furthermore, HCPs discussed that they felt inadequately trained to provide self-care support. Other barriers included inadequate office space, inadequate staff numbers, insufficient supplies and lack of equipment in the hospital.

Chapter 7 provides a quantitative evaluation of the prevalence of barriers and their association with adherence to self-care behaviours. This cross-sectional study was conducted in adults (n=252) with type 2 diabetes recruited from the diabetes clinics of three hospitals in Ghana. The most commonly reported barriers to self-care were: lack of knowledge on how to use a glucometer (59.8%); finding it difficult to change dietary habits (58.7%); and lack of money to purchase a glucometer (55.2%). The only significant association was between adherence to foot care and subjective norms barriers.

Chapter 8 provides a discussion of the main findings and implications of the thesis.